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A COMMUNITY BASED CROSS SECTIONAL STUDY ON PREVALENCE OF ANAEMIA AMONG POSTPARTUM MOTHERS IN CHENNAI

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BONAFIDE CERTIFICATE

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DECLARATION

I **Dr. C. SAMYKKHAN,** solemnly declare that this dissertation, entitled **"A COMMUNITY BASED CROSS SECTIONAL STUDY ON PREVALENCE OF ANAEMIA AMONG POSTPARTUM MOTHERS IN CHENNAI'',** has been prepared by me, under the expert guidance and supervision of **Prof.Dr.K.MARY RAMOLA, M.D.,** Professor and HOD, Department of Community Medicine, Government Kilpauk Medical College Hospital, Chennai and submitted in partial fulfillment of the regulations for the award of the degree M.D.(Community Medicine) by the Tamil Nadu Dr.M.G.R. Medical University and the examination to be held in May 2018. This study was conducted at Zone 11, Valasaravakkam, Greater Chennai Corporation, Chennai. I have not submitted this dissertation previously to any university for the award of any degree or diploma.

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CONTENTS

S. No.	Title	Page No.
1.	INTRODUCTION	1
2.	AIM AND OBJECTIVES	4
3.	JUSTIFICATION	5
4.	REVIEW OF LITERATURE	7
5	METHODS AND MATERIAL	45
6	RESULTS AND DISCUSSION	49
7	CONCLUSION	76
8	SUMMARY	77
9	LIMITATION	86
10	RECOMMENDATION	87
11	BIBLIOGRAPHY	
12.	MASTER CHART & KEYS	
13.	ANNEXURES Plagiarism Certificate Ethical Committee Certificate Modified Kuppuswamy Scale 2017 Information & Consent Form	

ABBREVIATON

AIIMS	-	All India Institute of Medical Sciences
ANM	-	Auxiliary Nursing Midwife
AWW	-	Anganwadi Worker
CI	-	Confidence Interval
GLV	-	Green Leafy Vegetable
GOI	-	Government of India
Hb.	-	Haemoglobin
HIV	-	Human Immunodeficiency Virus
HSC	-	Health Sub Center
ICDS	-	Indic grated Child Development Service
ICMR	-	Indian Council Medical of Research
IFA	-	Iron Folic Acids
LSCS	-	Lower Segment Caesarian Section
MCH	-	Maternal and Child Health
MO	-	Medical Officer
NFHS	-	National Family Health Serve
NHM	-	National Health Mission
NRHM	-	National Rural Health Mission
PHC	-	Primary Health Center
PICME	-	Pregnancy Infant Cohort Monitoring and Evaluation
RCH	-	Reproductive and Child Health
SES	-	Socio Economic Status
SPSS	-	Statistical Package for Social Science
SRS	-	Sample Registration System
UHN	-	Urban Health Nursery
UNICEF	-	United Nations Children Fund
WHO	-	World Health Organsiation

LIST OF TABLE AND FIGURE

S.N	Table or Figure Heading	Page
1	Grading of anaemia by WHO and UNICEF	7
2	Classification of public health significance on the basis of prevalence	9
3	Distribution of Socio-demographic factors in study population	49
4	Distribution of Socio-economic factors in family of study population	51
5	Descriptive analysis for Age at menarche, Age at marriage, Age at first conception	53
6	Distribution of dietary factors in study population	54
7	Distribution of Water and Sanitation factors in study population	56
8	Distribution about menstrual history in study population	57
9	Factors related to current pregnancy in study population	58
10	Puerperium related factors in study population	60
11	Knowledge related iron rich food in study population	61
12	Distribution of clinical pallor in study population	64
13	Distribution of postpartum mothers taking IFA tablet in study population	65
14	Anaemia level during antenatal and post antenatal in study population	66
15	Education level and anaemia status in study population	67
16	Socio economic status and anaemia level in study population	68
17	Analyses of Nutritional Factor and anaemia in study population	69
18	Analysis of Barefoot walking and anaemia in study	70

S.N	Table or Figure Heading	Page
	population	
19	Analysis of Antenatal IFA intake and anaemia in study population	71
20	Risk Factor associated with anaemia in post partum mothers by multiple regression analysis.	73
21.	Figure : 1 : Prevalence of Anaemia in this study population	62

INTRODUCTION

Anaemia is the most common nutritional deficiency disorder in the World. This condition occurs when the red blood cells do not carry enough oxygen to the tissues of the body. WHO defines anaemia as a disorder in which the haemoglobin content of the blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiencies.(1)

The prevalence of anaemia during pregnancy is widely recognized health problem throughout the world, particularly in the developing countries. But anaemia among post-natal women is not yet well studied. In 2011, WHO estimated that over 200 million women of reproductive age (191 million non-pregnant women and 11.5 million pregnant women) in the SEAR were anaemic (2), As per NFHS-4 (2015-16) report, in India 51% of rural and 45.7% of urban pregnant women are anaemic and in Tamil Nadu 52% of rural and 37% of urban pregnant women are anaemic (3).

The adverse effects of anaemia are, such as poor pregnancy outcome, cognitive impairment and reduced work capacity, impacts on both health and economic development. Anaemia due to iron deficiency

is the 7th leading cause of years lost to disability in women and. Anaemia in women and children is a moderate public health problem in some countries like Indonesia, Sri Lanka but in India, it is a severe public health problem (2).

The two most common causes of anaemia during pregnancy and puerperium are nutritional anaemia due to iron deficiency and blood loss. Iron is an essential element in formation of haemoglobin.

During pregnancy, the women requires about 1000 mg of iron i.e. 3-5 mg/day to maintain iron balance and this demand increase during later half of pregnancy up to 6.3mg/day, during postpartum period the iron requirement is 1.31 mg/day.(1)

If the women anaemic during pregnancy, she will become severely anaemic after delivery. Anaemia in childbearing women increases maternal mortality, prenatal and perinatal infant mortality and prematurity (4).

Considering the anaemia is a major public health problem, the Government of India launched a program in 1970 to prevent nutritional anaemia in mothers and children.

This program is being taken up by Maternal and Child Health (MCH) Division of Ministry of Health and Family Welfare. Now it is part of RCH program under NHM (5).

In spite of various approach to control of anaemia among child bearing women and children is available in our country, India is a still high prevalence country for anaemia and especially it is more among pregnant and postpartum mothers.

So this study aims to identify the contributing and correctable factors for anaemia among postpartum mothers.

AIMS AND OBJECTIVE

1) To Assess the Prevalence of Anaemia among Postpartum Mothers in Chennai.

2) To Identify the risk factors associated with postpartum Anaemia in this community the risk factors studied are,

   a) Socio-demographic factors of socio-economic status and education.

   b) Nutritional factors and Environmental factors.

   c) Health care delivery factors.

3) To measure the major contributing risk factors through regression analysis.

JUSTIFICATION

The anaemia is a leading cause of maternal mortality in India as well as around the World. Nutritional iron deficiency anaemia in pregnant women and postpartum mothers continues to be cause of concern. It is very easy to diagnose both clinically and by laboratory method, but detection, treatment and follow up are low in our country.

Though there are many number of study of prevalence of anaemia among pregnant mothers are available around the World, the number of study on prevalence of anaemia among postpartum mothers are limited. India is the first country in the World to implement Nutritional anaemia control program in 1970 and scaled up subsequently in RCH and NRHM/NHM program(4).

Though Antenatal registration and follow up antenatal visits to PHC/HSC is increased, almost 100%. The prevalence of anaemia among pregnant women and postpartum mothers continue to be in the category of severe public health problem in India as well as in Tamil Nadu. The prevalence of anaemia among postpartum mothers are increases as compared to pregnant state due to blood loss during delivery and anaemic pregnant women do not tolerate blood loss to the same degree as healthy

non-anaemic pregnant women(4). In fact the most cases of the anaemia during pregnancy and postpartum period is preventable and completely treatable, but still it is not achieved.

So through this study, I want to estimate the current prevalence of anaemia among postpartum mothers in Chennai and identify the risk factors contributing anaemia among them. And this study wants to compare and contrast postpartum anaemia with antenatal anaemia.

REVIEW OF LITERATURE

Definition of Anaemia and Postpartum period.

Anaemia is defined as a condition in which the number of red cells (and consequently their oxygen-carrying capacity) is insufficient to meet the body's physiologic needs. Specific physiologic needs vary with a person's age, gender, residential elevation above sea level (altitude), smoking behavior, and different stages of pregnancy.(6)

As per WHO(1972) defines anemia-regardless of its cause-as the presence of a Haemoglobin level less than 11 g/dl during first and third trimester of pregnancy and less than 10.5g/dl during second trimester of pregnancy and less than 10g/dl during postpartum period.(7,8,9)

Table 1: Grading of anaemia as per WHO and ICMR guideline.

Grade of anaemia	**WHO**	**ICMR**
Mild	9-11g/dl	10-11g/dl
Moderate	7-9g/dl	7-10g/dl
Severe	<7g/dl	4-7g/dl
Very Severs	-	<4g/dl

Postpartum mothers: Defined as the period from delivery of the placenta to 42 days after delivery (10, 11, 12).

PREVALENCE AND PUBLIC HEALTH PROBLEM

The 2011 estimates suggest anaemia affects around 800 million children and women. Globally, the mean blood haemoglobin concentration was 11.1g/dl (95% confidence interval [CI]: 11-11.3) in children.12.6g/dl (95% CI: 12.4-12.8) in non-pregnant women, 11.4g/dl (95% CI: 11.2-11.6) in pregnant women(13). As per WHO estimates in 2011, India's prevalence of anaemia among pregnant women was 54 (95% CI: 37-67) with the mean haemoglobin concentration was 10.8 g/dl (95% CI: 10.4-11.3).

As per NFHS-4 (2015-16) results, in India, 45% of urban, 52.1% of rural and in total 50.3% of pregnant women were anaemic. In Tamil Nadu, 37.2% of urban, 52.1% of rural and in total 44.4% of pregnant women were anaemic. (3)

The prevalence of anaemia attributed to iron deficiency, Available meta-analysis suggest that iron supplementation would increase the mean blood haemoglobin concentration by 8.0 g/L (95%CI: 5.0-11.0) in children, 10.2g/L (95%CI: 6.1-14.2) in pregnant women and this

indicates that about 42% of anaemia in children would be amenable to iron supplementation and about 50% of anaemia in women could be could be eliminated by iron supplementation(13).

Based on the prevalence, the community is categorized as follows;

Table 2: Classification of public health significance of anaemia on the basis of prevalence

S.N	Category of public health significance	Prevalence of anaemia
1	Severe	40 or higher
2	Moderate	20- 39.9
3	Mild	5-19.9
4	Normal	4.9 or lower

The medical causes can be direct or indirect. The most common direct medical causes of maternal death as per SRS (2001–03) are haemorrhage, mainly postpartum (37%), sepsis because of infection during pregnancy, labour and postpartum period (11%), unsafe abortions (8%), hypertensive disorders (5%) and obstructed labour (5%). These conditions are largely preventable and once detected, they are treatable. A

significant proportion of maternal deaths are also attributed to ‘indirect causes’, the most common of which are anaemia and malaria (14).

Most common causes of maternal death in India 34% Haemorrhage, 37%Sepsis, 11%Hypertensive disorders, 5%obstructed labour, 5%Abortion, 8% others (14).

ERYTHROPOIESIS

The formation of red blood cells is under feedback control. It is inhibited by a rise in the circulating red cells level to supernormal values and is stimulated by anaemia. It is also stimulated by hypoxia. (15)

Decrease in haemoglobin concentration due to various reason causes decreases arterial oxygen carrying capacity, which leads to increases erythropoietin production in kidney which stimulates erythropoiesis.

The red blood cells formation is described as follows;

Pleuripotent stem cell

↓

Progenitor cell

↓

GM-CSF erythroid series

↓

Pro erythroblast

↓

Basophilic normoblast

↓

Polychromatic normoblast

(Proliferation activity ceases after this stage and begins to produce haemoglobin in the cell and called as intermediate normoblast)

Orthochromatic normoblast

↓

(Final stage of maturation of nucleated red cell. Active Hb synthesis occurs in cytoplasm)

↓

Active extrusion of nucleus

Reticulocyte

Biconcave discoid shaped and more volume and size mature red cells

↓

Lose their mitochondria and ribosome

↓

Mature erythrocytes

IRON METABOLISM

Iron deficiency has been recognized since medieval times Chlorosis, a term derived from the Greek word meaning green, so called green sickness-exclusively in teenage girls.

NORMAL IRON PHYSIOLOGY

Full term infants begin life with 75 mg/kg body weight from mother in third trimester. These abundant stores are rapidly depleted over the first few months of life and most young children have tenuous iron imbalance, as their intake must keep pace with rapid growth (16).

The body iron content of normal adult men is 50mg/kg body weight or greater. In contrast, post pubertal women and pregnant, postpartum mothers; the average body iron content is 35mg/kg only (16).

Most of the body iron is found in heme-containing oxygen transport and storage proteins including hemoglobin and myoglobin. Heme iron is derived from liver, meat, poultry and fish and is well absorbed.

Most non-heme iron (approximately 1 gram in adult men) is stored as ferritin or hemosiderin in macrophages. Non-heme dietary iron, which

is found in cereals, beans and green leafy vegetables, nuts, jiggery and dried fruits, is less well absorbed.

The average daily intake of oral iron is 20mg and the amount of iron absorbed ranges normally from 3-6% of amount ingested. (15).

SOURCES AND CONTENT OF IRON

Diary product: Human milk 0.5mg/ Liter, Cow's milk 0. 02-0.3mg/ Liter (17)

Food groups: a) Pulse 9-11 mg/100 g, b) Cereals 4-11mg/100g, c) Meats and Fish 10-25mg/100g, d) Banana 0.9mg/100g, e) Mango 1.3 mg/100g,f) Melon 7.5mg/100g(17).

ABSORPTION OF IRON

Iron is absorbed in the ferrous form (Fe++) but most dietary iron is in the ferric form (Fe+++) duodenum and jejunum in the ferrous form(Fe++) but most dietary forms is in the ferric form(Fe+++). Most of the iron is absorbed in the duodenum and the proximal jejunum. The mucosal cells have the iron binding protein Apoferritin which combines with iron and stored as ferritin. The iron which enters the plasma is bound

to the iron transporting polypeptide transferring. Apo ferritin which is found in many other cells binds to form ferritin and stored (15).

BIOAVAILABILITY OF IRON

Iron homeostasis is maintained in the short term by increased absorption of iron in deficiency state and in the long term by the amount of iron present in the food (17). Food iron is present in most diets in a proportion of 6mg/1000 calories and it is two different types such as haem and non-haem iron (17).

Bioavailability of food iron is strongly influenced by enhancers and inhibitors in the diet (6). Presently, there is no satisfactory in vitro method for predicting the bioavailability of iron in a meal.

Iron absorption can vary from 1% to 40%, depending on the mix of enhancers and inhibitors in the meal. There, the adequacy-i.e. bioavailability-of iron in usual diets can be improved by altering meal patterns to favor enhancers, lower inhibitors, or both (6).

Enhancers of iron absorption include

- Haem iron, present in meat, poultry, fish and sea food;
- Ascorbic acid or Vitamin C, present in fruits, juices, potatoes, vegetables such as green leaves, cauliflower, and cabbage;
- Some fermented or germinated food and condiments

Inhibitors of iron absorption include

- Phytates, present in cereal bran, cereal grains, high-extraction flour, legumes, nuts and seeds;
- Food with high inositol content;
- Calcium, particularly from milk and milk products;
- Iron-binding phenolic compounds (tannins); foods that contain the most potent inhibitors resistant to the influence of enhancers include tea, coffee, and cocoa.

Iron Requirement in Pregnancy

In an average pregnancy the iron requirements are

- Basal iron : 280 mg
- Expansion of red cell mass : 570 mg
- Transfer to the fetus : 200-350 mg
- Placenta : 50-150 mg
- Blood loss at delivery : 100-250 mg

The total iron loss associated with pregnancy and lactation is approximately 1000mg therefore the recommended daily dietary allowance for iron in pregnancy is 27 mg instead of 8 mg in adult non pregnant women. Lactation requires a daily dietary allowance of 10 mg.

So, during pregnancy 500 to 600 mg of iron is required in addition to 240-480 mg of iron conserved because of amenorrhea, 2.5 mg of iron/ per day in the early pregnancy, 5.5 mg of iron / day in the 20-32 weeks of pregnancy and 6-8 mg of iron/ day from 32 weeks onwards. (18)

Determinants of anaemia

Immediate causes (2)

1) Iron deficiency
2) Other micronutrient deficiencies
3) Malaria, helminthes causing increased blood loss
4) Inflammation due to multiple causes including malaria, helminthes, chronic infections; tuberculosis, HIV, etc.,
5) Genetic disorders; hemoglobinopathies, G6PD deficiency

Intermediate causes (2)

1) Inadequate access or intake of nutrient-rich diets
2) Inadequate maternal & child care practices

3) Excess blood loss/ inadequate spacing of births

4) Unsafe water, poor hygiene and sanitation

5) Poor supply or demand of curative & preventive health services

Basic causes (2)

Socio-cultural and economic conditions and policies, basic healthcare infrastructure, inequitable distribution of services, inadequate local evidence of etiology

Classification of anaemia

1. Nutritional: Iron deficiency, Folate and Vit. B12 deficiency, mixed deficiency

2. Haemoglobinopathies: Thalasemia, Sickle cell anaemia

3. Miscellaneous anaemic disorders: Aplastic anaemia, autoimmune hemolytic anaemia and anaemia associated with chronic disease or chronic infection (19).

CAUSES OF ANAEMIA

Direct Causes

Poor, insufficient, or abnormal red cell production

a) Poor dietary intake and/or absorption of iron

b) Poor dietary intake and/or absorption of vitamins (A, B-12, folic acid, and possibly B-6, C, and riboflavin) and copper

c) Increased needs for nutrients due to growth or disease (diarrhea) HIV/AIDS

d) Other infectious diseases (tuberculosis, malaria)

e) Genetic blood diseases (sickle cell disease or trait, thalassemia) (21)

EXCESSIVE RED BLOOD CELL DESTRUCTION: Malaria

EXCESSIVE RED BLOOD CELL LOSS

Helminth (worm) infections (hookworm, schistosomiasis).

Bacterial or viral infections (peptic ulcers, gastritis, diarrhea).

Reproduction (excessive blood loss during menstruation, delivery, and postpartum period; too many pregnancies; shortened postpartum amenorrhea).

Contraceptive methods (intrauterine devices)

CONTRIBUTING CAUSES

Knowledge and behavior

Poor knowledge among health workers about anemia, iron supplementation, and other anemia prevention and control interventions.

Poor knowledge among vulnerable groups about the importance of anemia and anemia prevention and control interventions.

Cultural taboos or biases (e.g., women eating after others).

Practices that restrict food intake, including poor infant breastfeeding practices and inadequate introduction of complementary foods.

Poor compliance with recommended behaviors (iron supplementation; malaria, tuberculosis, and other medication regimens; use of family planning; use of sanitation facilities; HIV prevention behaviors) (21).

ENVIRONMENTAL

Contamination by heavy metals (lead).

Lack of access to services.

Low use of antenatal and other services providing iron supplements.

Lack of trained birth attendants to manage bleeding during delivery.

Lack of access to sanitation services that mitigate helminth infestation.

Lack of access to bednets to prevent malaria transmission.

POVERTY

Lack of income to buy foods with adequate amounts of absorbable iron or to obtain iron supplements, malaria treatment, insecticide treated bed nets, shoes to prevent helminth infection, and other preventive commodities or services (21).

MULTIPLE PREGNANCIES

When the woman enters pregnancy with little or no iron reserve which is compounded by closely spaced pregnancies and prolonged lactation leads anaemia (4).

CLINICAL FEATURES OF ANAEMIA

Symptoms

There may be no symptoms, especially in mild and moderate anaemia. Patient may complain of feeling of weakness, exhaustion and lassitude, indigestion and loss of appetite. Palpitation, dyspnoea, giddiness, oedema and rarely anasarca and even congestive heart failure may occur (20).

Signs : There may be no signs especially in mild anaemia. There may be pallor, glossitis and stomatitis, may have oedema due to hypoproteinaemia. Soft systolic murmur may be heard in mitral area due to hyper dynamic circulation (20).

LABORATORY DIAGNOSIS OF ANAEMIA

Anaemia can be diagnosed by simple and inexpensive laboratory test :

1. Haemoglobin Concentration: Though reduction in Hb. concentration is a late manifestation of iron deficiency, it is the simplest, most practical and cost effective test for the diagnosis of anaemia. Haemoglobin can be estimated by Taliquist's method or

Sahil's method or Cyanomethaemoglobin method or by Haemo cue method.

2. Blood Smear: Peripheral blood smear examination in differentiating various type of anaemia.

3. Red cell indices: Measurement of red cell indices, though not essential as first time investigation, is useful in differentiating various types of anaemia.

Most modern auto analyzer automatically report indices such as MCV, MCH, MCHC and Red cell distribution (22)

1) Serum ferritin estimation.

Impact and consequence of anaemia during pregnancy and postpartum period.

As per WHO estimates, 20% of maternal mortality is directly due to anaemia.

Postpartum Anaemia Mothers have a negative influence on the quality of life and well-being of mothers. The physical consequences are fatigue, decreased physical working capacity, dizziness, impaired function of epithelial tissues, increased frequency of infection, restless leg and in particular impairs lactation, postpartum depression and impairs

mother-infant interaction. So, this will affects infant physically and mentally (23).

NATIONAL NUTRITIONAL ANAEMIA PROPHYLAXIS

National Nutritional Anaemia Prophylaxis Program. The National anaemia control program was launched in 1970 to prevent nutritional anemia in mothers and children. Under this program, the expected and nursing mothers as well as acceptors of family planning are given one tablet of iron and folic acid containing 60 mg elementary iron which was raised to 100 mg elementary iron, however folic acid content remained same (0.5 mg of folic acid) and children in the age group of 1-5 years are given one tablet of iron containing 20 mg elementary iron (60 mg of ferrous sulphate and 0.1 mg of folic acid) daily for a period of 100 days (24). This program is being taken up by Maternal and Child Health (MCH) Division of Ministry of Health and Family Welfare. Now it is part of RCH program under NHM (5). Currently Iron and Folic Acid supplementation for pregnant and postpartum mothers are given for 100 days during antenatal and postnatal period.

12-by-12 INITIATIVE FOR ANAEMIA CONTROL

A12-by-12 initiative was launched AIIMS ON April 24, 2007 with view to ensure that every child should have haemoglobin of 12 grams by the age of 12. This will go a long way in improving the health of the future parents (25)

National program to control and prevent anemia have not been successful. Experiences from other countries in controlling moderately-severe anemia guide to adopt long term measures i.e. fortification of food items like milk, cereal, sugar, salt with iron. Nutrition education to improve dietary intakes in family for receiving needed macro/micro nutrients as protein iron and vitamins like folic acid, B12 etc. for hemoglobin synthesis is important. Nutritional Anemia Control Program should be comprehensive and incorporate nutrition education through school health and ICDs infrastructure to promote regular intake of iron/ folic acid-rich foods, to promote intake of food which helps in absorption of iron and folic acid and adequate intake of food.

WHO GUIDELINE FOR ANAEMIA CONTROL AT PRIMARY CARE LEVEL

Screening for anaemia and assessing iron status When and how to screen The signs and symptoms of anaemia-pallor of the skin and of the conjunctiva, fatigue, shortness of breath, lack of appetite-are nonspecific and difficult to detect. Indeed, the clinical detection of anaemia is influenced by so many variables, such as skin thickness and pigmentation, that it is unreliable unless the anaemia is very severe. Laboratory tests should therefore be used to diagnose anaemia and determine its severity.

Such tests are useful in individuals in whom anaemia is suspected, especially those from known high-risk groups; they can be repeated over time to monitor the effectiveness of treatment. Laboratory tests can also be used to determine the prevalence and severity of anaemia in a population as well as to single out the groups that are most affected. It will be recalled that individuals begin to suffer from the adverse effects of iron deficiency well before they become frankly anaemic and hence detectable by the tests described above.

Special laboratory tests have therefore been developed for the detection of iron deficiency. Such tests can also serve to show whether

the anaemia present in a given population is due to iron deficiency or to another cause, such as parasitic infection, which would require completely different therapeutic or preventive measures. Tests of iron deficiency are thus suitable for monitoring the iron status of population groups. They should not be used routinely for diagnostic purposes in primary health care. In the case of pregnant women, it is important to note that routine laboratory confirmation of iron deficiency anaemia is neither medically necessary nor justified from a cost-benefit point of view.

Because most pregnant women eventually become anaemic, it makes sense as a preventive measure to give all women supplementation with medicinal iron during the second half of pregnancy. This can be done through primary health care. Supplementation will do no harm to the few women not requiring it; for the vast majority who are iron-deficient, it will be of great benefit.

Anaemia screening tests The best laboratory tests for the diagnosis of anaemia involve measuring the packed volume of red cells (haematocrit) or the concentration of haemoglobin in circulating blood. Both determinations can be made on either capillary blood obtained by skin puncture or venous blood obtained by venepuncture. Skin puncture

is easier to perform under field conditions, especially in developing countries, but the use of capillary blood substantially decreases diagnostic reliability. In the case of venous blood, sequential values in the same individual usually remain within 0.6 g of haemoglobin per dl.

The discrepancy between capillary and venous values ranges between 0.5 and 1.0 g of haemoglobin per d1 (35). In routine primary health care, an error of 0.5 g per dl is of little or no consequence. It may be a more serious drawback when the primary health worker is attempting to follow the effect of iron therapy in an anaemic individual. In general, however, carefully collected capillary samples provide acceptable results.

Capillary blood a specimen of capillary blood is obtained from the finger tip (or the heel, for an infant). To obtain the best possible sample, warm the finger tip (or heel) first to promote blood flow. After sterilizing the area, make a clean puncture with a sterile lancet to obtain a free flow of blood. Avoid squeezing the extremity so as to minimize the contamination of blood with tissue fluid. Depending on the procedure to be followed, the blood is taken into a pipette, heparinized tube or glass cell, or else dropped on to filter paper. Venous blood. Venous blood is generally taken from the antecubital vein with a sterile 20 or 21 SWG

needle and a dry sterile syringe. Smaller gauge needles are not suitable for obtaining free blood flow.

Alternatively, a vacuum tube (for example, a Vacutainer) may be used. In persons whose veins are not easily seen or felt, the skin area may be warmed and a tourniquet or sphygmomanometer cuff applied. Clean the area of venupuncture with 70% alcohol and allow it to dry before inserting the sterile needle into the vein. Draw blood into the syringe, remove the tourniquet or sphygmomanometer cuff and withdraw the needle, keeping the swab in place for a few minutes to ensure that any leaking is staunched.

Safety precautions. It is very important in both laboratory and field to avoid the transmission through blood of infection with hepatitis B virus or the human immunodeficiency virus (HIV) which causes acquired immunodeficiency syndrome (AIDS). Blood lancets, needles and syringes should ideally be disposed of after a single use. However, this is not always practicable.

Sterilizing in a hot air oven or in a pressure cooker (autoclave), or disinfecting by thorough boiling (20 minutes), is sufficient. It is not adequate to leave such equipment in an alcohol bath. Procedures should always be established to prevent any risk of transmission from subject to

subject or from subject to technician. Iron deficiency anaemia. Haemoglobin concentration.

There are several laboratory techniques for measuring haemoglobin concentration. Most of those that have been and are still used in primary health care are inaccurate in routine practice and should be discarded (36-39). The accurate and reliable procedures are those which convert haemoglobin to one of its compounds, the concentration of which is determined by matching the colour with a known standard in a photoelectric colorimeter or by measuring absorption in a spectrophotometer.

Three such techniques in common use are the cyanmethaemoglobin (HbCN), the oxyhaemoglobin (HbOJ and the alkaline haematin methods (40). The cyanmethaemoglobin method (41) has become the most popular of the three because it measures practically all haemoglobins except sulfhaemoglobin. Another major advantage of this method is that the standards used remain stable for a long time. In this method blood is mixed with Drabkin's solution in order to convert haemoglobin into cyanmethaemoglobin, the absorbance of which is then measured at 540 nm in a photoelectric colorimeter or in a spectrophotometer.

An absolute prerequisite for using cyanmethaemoglobin to determine haemoglobin concentration is to dilute the blood in 250 times its volume of Drabkin's solution. Adding an exact amount of blood to a measured amount of diluent is simple to do in an established laboratory where the blood can be drawn and measurements made the very same day. However, if blood is collected in the field, it will have to be transported to a laboratory for the determination.

The transport of blood samples presents serious problems in developing countries. In warm, humid climates, unrefrigerated blood quickly becomes unsuitable for haemoglobin determination because of evaporation or contamination. A possible alternative is to carry a quantity of stoppered test tubes each containing an accurately measured 5-m1 volume of diluent (Drabkin's solution).

The blood is collected and 20 p1 is immediately added to the diluent, the tube is once again stoppered, and the blood-reagent mixture is transported to a laboratory where measurements can be made. Leakage of diluent from the stoppered tubes is not infrequent, however, and this seriously compromises the accuracy of the results obtained. There are two ways to overcome this problem:

1. Drabkin's solution (5 ml) is pipetted into the test tube at the time of blood collection; automatic pipettes or seripettors may be used for this purpose. Once an accurate dilution has been made, a small spillage of the sample will do no harm since it will not change the concentration. However, evaporation from open vials will affect the concentration and hence the results.

2. An accurate volume of blood is delivered on to No. 1 Whatman filter paper (cut into 1.5 X 1.5 cm squares). The blood is allowed to dry and the squares of paper are labelled with a pencil. The squares are placed in small envelopes and sent to a laboratory. There, they are dropped into accurately measured amounts of diluent (Drabkin's solution), and the blood is allowed to diffuse out of the filter paper and into the diluent for two hours. The solution is then mixed by shaking and read in a photoelectric colorimeter or a spectrophotometer.

This method is relatively easy to reproduce and reasonably suitable for those situations where a laboratory is located at some distance from blood collection points. Small battery-operated colorimeters are now available that allow determinations to be made in the field. Packed cell volume (haematocrit) Microhaematocrit can be measured instead of haemoglobin concentration (41).

This is done by centrifuging a minute quantity of blood that has been collected in a heparinized capillary tube. One of the advantages of this method is its technical simplicity, particularly when applied to the small blood samples obtained by skin puncture. Another advantage is that it can be performed in the field with battery-operated microcentrifuges. On average, haematocrit values are roughly equivalent to three times the haemoglobin concentration.

Treatment of iron deficiency anaemia In clinical practice, any patient suspected of being anaemic is tested and, if the anaemia is confirmed, treated with medicinal iron supplements. The situation is very different in large-scale public health programmes, particularly in developing countries, where systematic laboratory testing is organizationally and financially impossible.

In these settings, the approach that is most cost-effective is to give iron supplements to entire high-risk groups, particularly pregnant women. With this approach the distinction between treatment and prevention is blurred, as supplementation will act to reverse anaemia in some individuals and prevent it from developing in others. For the purposes of this book, routine supplementation of high-risk groups is considered as prevention and preventive approaches, such as manipulation of the diet.

Therapy as such must rely on medicinal iron, since dietary changes alone cannot correct iron deficiency anaemia, especially when severe. The treatment of choice is the oral administration of ferrous fumarate, gluconate or sulfate, parenteral administration being reserved for patients who are completely intolerant of oral iron.

Only the most severe cases (haemoglobin concentration less than 3 g/dl) call for a blood transfusion. Oral iron therapy Iron tablets In 1832 Blaud introduced iron therapy in the form of what came to be called "Blaud's pill": a tablet containing ferric carbonate as its main constituent (45). Effective in correcting iron deficiency anaemia, it remained the mainstay of treatment until other iron preparations were introduced and it became obvious that ferrous iron was better absorbed than ferric iron. To this day practically all medicinal iron preparations contain ferrous compounds. Ferrous fumarate, gluconate and sulfate are commonly used.

Other ferrous compounds previously or still in use include ferrous succinate, lactate, glycine sulfate, glutarnate, citrate, tartrate and pyrophosphate. Although ferrous succinate is probably more completely absorbed, these compounds, in addition to being more expensive, offer no advantages over ferrous fumarate, gluconate or sulfate. lron deficiency anaemia Iron tablets contain a percentage of elemental iron that varies with the molecular weight of the iron compounds.

PERCENTAGE AND AMOUNT OF IRON IN SOME COMMONLY USED IRON TABLETS

Ferrous fumarate 200 66 Ferrous gluconate 300 36 Ferrous sulfate (7H20) 300 60 Ferrous sulfate, anhydrous 200 74 Ferrous sulfate, exsiccated (1 H,O) 200 60 lron compound Elemental iron Preparation (mg) per tablet (mg) per tablet Uncoated (compressed) tablets and sugar-coated tablets are the least expensive formulations and disintegrate well in the stomach. However, they become oxidized over time and hence less effective, especially in humid climates. 010 of iron Enteric-coated tablets are somewhat more expensive.

They have the added drawback that they disintegrate only partially when exposed to gastric juices. All coated preparations and batches therefore need to be subjected to an in vitro hydrochloric acid disintegration test; those that do not disintegrate in 0.1 mol/litre HCl within two hours should be rejected (46).

The rationale for slow-release preparations is that iron absorption is inversely related to the amount of iron present in the duodenum jejunum, while the frequency of gastrointestinal side-effects is directly proportional to that amount. Slow-release preparations allow only a small amount of iron at any given moment to come into contact with the duodenal mucosa,

thus improving both absorption and gastrointestinal tolerance. As a consequence, the same therapeutic effect can be obtained with a smaller dose of iron (as compared with plain tablets) while compliance with treatment is improved because there are fewer side-effects. Treatment Liquid preparations.

During pregnancy, women tend to become deficient in both iron and folate. It is therefore desirable to combine both haematinics in one tablet.

The addition of folate (250 pg) to ferrous sulfate (60 mg of iron) increases the tablet's cost by an insignificant amount if at all. Because ascorbic acid is a known enhancer of iron absorption, it has been incorporated into many iron preparations. When enough is added (at least 200 mg) ascorbic acid increases medicinal iron absorption by about 30% (47). Unfortunately, however, not only is ascorbic acid relatively expensive, but it increases the frequency of side-effects and thus the risk of poor compliance (48,49).

Erythropoietic activity following iron administration is directly related to the severity of anaemia; the increase in haemoglobin concentration is inversely proportional to the initial concentration. The best absorption of therapeutic iron therefore occurs during the first few

weeks of treatment. For example, adults taking 100 mg of iron (in the form of iron sulfate) twice a day with meals absorbed an average of 14% during the first week of therapy as compared with 7% after three weeks and 2% after four months (48).

The first month of therapy would thus appear to be the most important time for ensuring the success of treatment. A positive response to treatment can be defined as a daily increase in haemoglobin concentration of 0.1 g/dl from the fourth day onwards. Although the response in terms of haemoglobin concentration is virtually complete after two months, iron therapy should continue for another two to three months to build up iron stores to about 250-300 mg, or the serum ferritin level to 30, ug/l.

For pregnant women the daily administration of folate (500 pg) with iron (120 mg) is beneficial since anaemia during pregnancy is usually caused by a deficiency of both nutrients. A suitable combination tablet, to be taken twice a day, would contain 250 pg of folate and 60 mg of iron.

The oral administration of iron can cause gastrointestinal side-effects in some individuals such as epigastric discomfort, nausea, vomiting, constipation, and diarrhoea. The frequency of these side-effects

is directly related to the dose of iron. It is independent of the specific iron compound used; no one compound is better tolerated than any of the others.

However, as explained above, certain formulations are better tolerated, particularly the slow-release preparations. In addition, iron consumed with a meal is better tolerated than when it is taken on an empty stomach (50), although the amount of iron absorbed is reduced. The major reason for the failure of iron therapy is non-compliance due to the side-effects caused by an excessively high initial dose of iron.

The patient typically takes the pills for a few days and bears with the discomfort, but stops taking the medication as soon as he or she experiences an increased sense of well-being from the rise in haemoglobin; unfortunately, this occurs long before the haemoglobin has reached a normal level. In cases of gastrointestinal intolerance, it is vital not to discontinue therapy and risk treatment failure.

Rather, the dose of iron should be reduced and then gradually increased again until the full dose is reached and is well tolerated. If slow-release preparations are available and affordable, they should be used. With plain tablets, the frequency of side-effects can be reduced if the patient takes them with meals.

Parenteral iron therapy there is little justification for giving parenteral iron when oral therapy is possible. The parenteral route is indicated only when oral administration causes severe vomiting that cannot be stopped by lowering the dose of iron, or in cases of persistent non-compliance.

The most commonly used preparation for intramuscular or intravenous administration is Imferon R (iron dextran). The advantage of the intravenous method is that the complete iron requirement can be supplied in a single dose. This technique, known as total dose infusion, has been used especially in obstetric practice (51), where it solves the problem of non-compliance and permits the increased requirement during pregnancy to be met in full. The recommended intravenous dose for adults (including pregnant women) is 500 mg of iron in 10 m1 of saline solution given over a period of 10 minutes following a test dose of 1-2 drops.

Intravenous infusion must be done only in a hospital. The recommended intramuscular dose is 100 mg of iron in 2 m1 of saline solution. Intramuscular administration should be used only when there are no adequate facilities available for intravenous administration.

CHALLENGES AND GAP IN KNOWLEDGE

Improving the quality of maternal and other related reproductive health services is a major programmatic challenge in resource-poor countries. India was the first country to implement National nutritional anaemia prophylaxis of iron folic acid supplementation to pregnant and lactating women and children.

In spite of screening for anaemia and iron folic acid supplementation is undertaken in India, still face a challenge to tackle this problem. The reason could be failure in the monitoring and evaluating the program thoroughly.

Anaemia remains to be a problem with multifactorial causes. So along with iron folic acid supplementation, other comprehensive approach like health education at every level, water and environmental sanitation, food based intervention and further research to eliminate anaemia due to nutritional deficiency.

Blood test for serum ferritin seems to be a sensitive and an early indicator of iron deficiency; it is readily available and relatively inexpensive and can be used for screening and monitoring.

STRATEGIES TO PREVENT ANAEMIA

Recommendations from an Expert Group Consultation. Policy recommendations to accelerate actions Update if necessary, national policies with regard to anaemia and other micronutrient deficiencies. Advocate donors and other stakeholders to support national efforts in preventing anaemia Communicate with policymakers, the importance of preventing anaemia using appropriate communication strategies. Develop evidence informed strategies to address anaemia using current evidence from a situational analysis.

USE PRIMARY AND SECONDARY DATA TO OBTAIN THE FOLLOWING

Magnitude, prevalence and distribution of anaemia dietary information and food habits, adequacy of complementary feeding. Socio-economic status, food security status of vulnerable groups. Presence of iron deficiency and other micronutrient deficiencies. Water, sanitation and hygiene status, worm load, antihelminthic therapy interventions. Prevalence of diarrhoea and respiratory infections. Malaria status, prevalence of other chronic infections and haemoglobinopathies. Epidemiology of anaemia using smaller studies of population sub samples.

If technical / financial resources are inadequate to conduct an in-depth assessment, information from similar countries could be utilized. Programme planning; to develop specific plans of action and their strategic implementation Prioritize national goals for anemia

a) Prioritize target groups for anaemia assessment, prevention and control, based on resources available, from highest to lowest priority; women of reproductive age particularly pregnant women, lactating women, pre -pregnant women, adolescents, children aged 6 0-2 years, children aged 2-10 years, other groups.
b) Adopt national targets and timelines for anaemia reduction based on current prevalence and determinants of anaemia in the national setting. Implement a programme of action using WHO’s evidence -informed guidance on preventing anaemia to facilitate best practices on preventing iron deficiency and other causes of anemia using specific entry points in the life cycle and action sequences most appropriate to the country context. These include.
c) Population measures to improve overall diets, promote and support consumption of micronutrient rich diets through dietary diversification.

d) Enacting relevant legislation for fortifying staple commodities within national food safety frameworks.
e) Adherence to WHO' s guidelines on regimes and dosages, while taking into consideration other interventions containing iron (fortified foods, multiple micronutrient powders). d) promoting overall improvement in diets, adherence to supplementation and other interventions through effective communication.

Develop and strengthen surveillance mechanisms to monitor and guide anaemia prevention programmes, using reliable and valid methods. Build capacities

a) Of health workers and other related personnel to provide clear and specific messages to prevent and treat anaemia.
b) Of community volunteers or workers (as relevant) to provide key messages on anemia, iron deficiency/other causes to target populations.

Ensure comprehensive and sustained actions to improve water, sanitation and hygiene, immunization, malaria prevention activities and genetic counselling for thalassemia patients and their convergence with anaemia programmes.

Address socio economic and equity issues including women's education and empowerment, improve knowledge and behaviours on nutrition and understanding the importance of improving overall nutrition status. 7 Technical and research considerations Organize an expert consultation at national level to review the situation (prevalence, on-going policy and program), consensus on causes and feasible interventions, in collaboration with implementation agencies and consensus on the plan of action.

REVIEW AND ASSESS

a) Evidence of success in reducing anemia using regional and country level information.

b) Program performance and effectiveness : coverage, technical and operational issues to improve and/or scaling up programmes.

c) Feasibility to implement a new, innovative programmes. Advance capacities of health workers and other related personnel to provide clear and specific messages to prevent and treat anaemia.

d) Knowledge of community volunteers or workers (as relevant) to provide key messages on anemia, iron deficiency/other causes to target populations.

SUPPORT RESEARCH AND DEVELOPMENT ON

a) Strategic/innovative implementation that suit national and local contexts for prevention and treatment of anemia and its causes
b) Scientific evidence on anaemia which would contribute to the global knowledge base.

DISSEMINATION OF INFORMATION: COMMUNICATION STRATEGIES DISSEMINATE INFORMATION

a) On consequences of iron deficiency at all life stages.
b) On promoting diversified and adequate diets to prevent iron and other micronutrient deficiencies
c) On importance of addressing socio economic and women's equity issues in preventing anaemia
d) On success in reducing anaemia. using regional and country platforms to facilitate best practices (2).

METHODS AND MATERIALS

STUDY DESIGN :

A community based cross-sectional study

TARGET POPULATION:

Postpartum mothers

STUDY POPULATION :

Postpartum mothers, who reside in zone 11, Greater Chennai Corporation, Valasaravakkam, Chennai.

STUDY AREA:

Zone 11, Valasaravakkam, Chennai.

STUDY PERIOD :

April to July 2017.

INCLUSION CRITERIA:

Postpartum mothers, who reside in zone 11, Greater Chennai Corporation, Chennai.

EXCLUSION CRITERIA:

Post aborted women.

SAMPLE SIZE :

$4pq/L^2$; Prevalence of Postpartum mothers' anaemia from previous study is 44%, Significance level (alpha error) at 5% and Confidence level at 95%. Absolute precision 5.3 and 10% for non-responders, the sample size is 350.

SAMPLING METHOD

The population of zone 11, Valasaravakkam, Greater Chennai Corporation was 253573 during the year 2016 with a birth rate of 14 per 1000. Total delivery during the study period was 1200. From that 350 postpartum mothers were selected through simple random method, using PICME register as the sampling frame.

STUDY VARIABLE, INSTRUMENT AND CASE DEFINITION

1) **Postpartum Mothers:** The period from immediately after delivery to up to 42 days of delivery(6,7,8)

2) **Postpatum Anaemia is** defined as a reduction in the concentration of haemoglobin in a sample of venous or capillary blood is less than 10 g/ dl (9, 10, 11)

3) **Haemoglobin estimation will be done by HemoCue Hb 301 System. This method was used during NFHS -4 (2015-16) (3)**

PRINCIPLE:

Absorbance measurement of whole blood at an Hb/HbO2 isobestic point; dual wavelengths (506 nm and 880 nm) for Hb. measurement and turbidity compensation.

CALIBRATION

Factory calibrated against the ICSH reference method; need no further calibration. **Sample Material**: Capillary, venous or arterial whole blood.

MEASUREMENT RANGE

0-25.6 g/dl.

SAMPLE VOLUME :

10µl **Result**: Within 10 seconds

OCCUPATION, EDUCATION AND SOCIO ECONOMICAL STATUS :

Will be assessed using modified kuppusamy scale

QUESTIONNAIRE (ENCLOSED):

Data was collected using a pretested semi -structured proforma from postpartum mothers (enclosed in annexure).

STATISTICAL ANALYSIS*:*

The data collected will be entered in excel and analyzed using SPSS 21.0

1) Prevalence of anaemia presented as proportion with 95% CI.

2) Association of anaemia with other risk factor will be estimated by comparing anaemia prevalence between group with or without risk factors.

3) A multivariate logistic regression model will be applied to study factor associated with anaemia.

RESULTS AND DISCUSSION

Three hundred and fifty postpartum mothers were included in this study and their socio-demographic, nutritional, water and sanitation, obstetrics and related factors were studied.

Table 3: Distribution of socio demographic factors in study population (N=350)

Socio demographic factors	Frequency	Percentages
Age group		
15 -24 years	165	47.14%
25-29	130	37.14%
30 and above	55	15.71%
Education		
Illiterate & Primary school	15	4.29%
Middle school	46	13.14%
High school	106	30.28%

HSS/diploma	110	31.42%
Graduate	59	16.86%
Postgraduate/Professional	14	4.00%
Occupation		
House wife	332	94.86%
Working women	18	5.14%

Among the three hundred and fifty (350) women studied, only 15.71% (55/350) of the women belong to the age group of 30 and above (Table 3). It was unfortunate to find 5.14% (18/350) of postpartum mothers were working even during the post natal period (Table 3). It was nice to see 96% of mothers studied above primary education (Table 3).

Table 4: Distribution of Socio economic factors in family of study population (N=350)

Type of family	Frequency	Percentages
Nuclear	204	58.29%
Non-Nuclear	146	41.71%
Husband education		
Illiterate & primary school	13	3.71%
Middle school	64	18.29%
High school	127	36.29%
Hr. sec. / Diploma	82	23.43%
Graduate & Postgraduate / Professional	64	18.29%

Socio economic status		
Upper	12	3.43%
upper middle	68	19.43%
Lower middle	206	58.85%
Lower	64	18.29%

Among three hundred and fifty women in our study 58.29% (204/350) of mothers were from nuclear family (Table 4). As per modified Kuppusamy scale, 77% (270/350) of mothers from lower middle and lower class (Table 4).

Table 5: Descriptive analysis for Age at menarche, Age at marriage, Age at first conception in study population (N= 350)

Parameter	Mean ±SD	Median	Min	Max	95% C.I. for EXP(B)	
					Lower	Upper
Age at menarche	13.69 ± 1.2	14.00	8.00	17.00	13.57	13.82
Age at marriage	21.54 ± 2.82	21.00	15.00	30.00	21.24	21.84
Age at first conception	22.57 ± 2.92	22.00	17.00	31.00	22.26	22.87

In our study, the median age of menarche is 14 years with minimum age 8 years and maximum age 17 years. The median age of marriage is 21 years with minimum 15 years and maximum 30 years. The median age of first conception is 22 years with minimum 17 years and maximum 31 years.

Table 6 :

Distribution of dietary factors in study population (N=350)

Dietary variables	Frequency	Percentage
I. Drinking tea /coffee		
Yes	269	76.86%
No	81	23.14%
II. Green leafy vegetables consumption		
Daily	214	61.14%
Weekly	108	30.86%
Occasionally	28	8.00%
III. Dates and dry fruits consumption		
Daily	40	11.43%
Weekly	70	20.00%
Occasionally	240	68.57%

IV. Fruits intake		
Daily	30	8.57%
Weekly	92	26.29%
Occasionally	228	65.14%
V. Fish consumption		
Daily	6	1.71%
Weekly	274	78.29%
Occasionally	70	20.00%
VI. Meat /poultry consumption		
Weekly	310	88.57%
Occasionally	40	11.43%

In our study, two hundred and sixty nine 76.86% (269/350) of mothers drink tea or coffee daily (Table 6). The frequent consumption of green leafy vegetable was lacking in 8% (28/350) of mothers and only less than 11% of mothers consume dates & fruits daily (Table 6). The most of the mothers consume fish and meat weekly, that is about 78% to 88% (Table 6).

Table 7: Distribution of Water and Sanitation factors in study population (N=350)

Sanitation factors	Frequency	Percentages
Bare foot walking	54	15.43%
Open air defecation	6	1.71%
Toilet facility available	344	98.28%
Whether water boiled		
Boiling water	38	10.86%
Not boiling water	312	89.14%
Source of water		
Well water	73	20.86%
Metro water	227	64.86%
Mineral/packed water	46	13.14%
Others sources	4	1.14%

In our study, 15.43% (54/350) of women were walking bare foot and1.71 % (6/350) of mothers not having toilet facility, so doing open air defecation and only 10.86% (38/350) of them are boiling water for their drinking purpose (Table 7).

Table 8: Details about Menstrual history in study population (N=350)

Menstrual history	Frequency	Percentages
Menstrual cycle duration		
<3 days	38	10.86%
3-5 days	282	80.57%
>5days	30	8.57%
Menstrual cycle flow		
Excess	4	1.10%
Normal	342	97.70%
Less	4	1.10%

In this study, the duration of menstruation was more than five days elicited in 8.57% (30/350) of mothers and 1.10% (4/350) mothers had excess flow of menstruation during prenatal period (Table 8).

Table 9: Factors related to current pregnancy in study population (N=350)

Current conception variable	Frequency	Percentages
Time of registration of present pregnancy		
<12 weeks	308	88.00%
12-20 weeks	32	9.14%
>20 weeks	10	2.86%
Gravida		
Primi	155	44.29%
Multi	195	56.71%
No. of AN visits of present delivery		
3-5 visits	2	0.57%
6 and above visits	348	99.43%
Deworming done		
Yes	221	63.14%
No	129	36.86%

Mode of delivery		
Normal delivery	226	64.57%
LSCS delivery	124	35.43%
Excess bleeding during delivery		
Yes	27	7.71%
No	323	92.29%
Any blood transfusion after delivery		
Yes	9	2.57%
No	341	97.43%

The Government of Tamil Nadu goal of antenatal registration within 12 weeks is 100%, but this study shows that only 88.00% (308/350) of mothers registered their pregnancy status in the health care system within twelve weeks of pregnancy (Table 9). It was observed that 99.43% (348/350) of mothers visited health facility for antenatal check up for more than six times in their antenatal period (Table 9). The 44% (155/350) of mothers were primi gravida and the most of the delivery happened by normal, it was 65% (226/350) (Table 9).

Table 10: Puerperium related factors in study population (N=350)

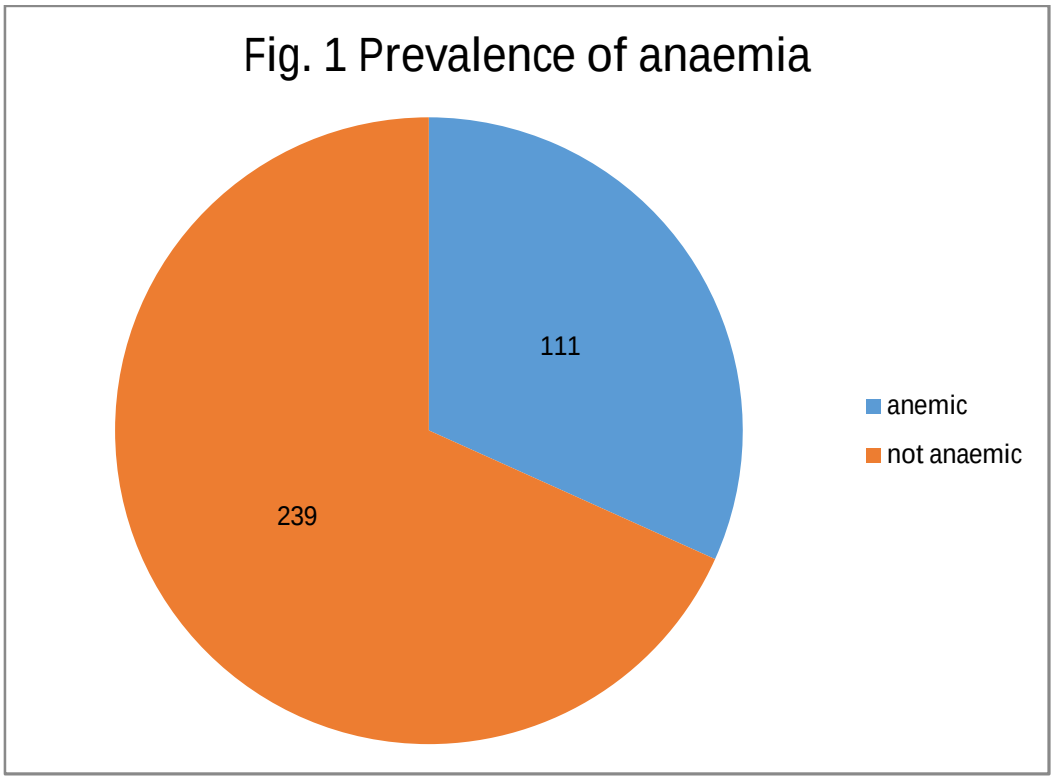
Variables	Frequency	Percentages
Breast feeding after delivery		
within 1 hour	235	67.14%
1-4 hours	79	22.57%
>4 hours	36	10.29%
Exclusive breast feeding		
Still birth	2	0.57%
Yes	330	94.29%
No	18	5.14%
Nature of vaginal discharge at now		
Red	85	24.29%
Pink	61	17.43%
White/No	204	58.29%

In our study, breast feeding within one hour after delivery was about 67% (235/350) only (Table 10), this may be due to 35% of them delivered by LSCS (Table 9). As per NHM, GOI guideline breast feeding should be started within one hour after delivery. It was nice to find out 94% (330/350) of mothers feeding their new born exclusively by breast feeding (Table 10).

Table 11: Knowledge factors related to iron rich food consumption in this study (N=350)

Variable	Frequency	Percent (95% CI)
Awareness related to iron rich food		
Yes	234	66.86% (61.77%-71.58%)
No	116	33.14% (28.42%-38.23%)
Source of awareness of iron rich food for who aware		
AWW	2	0.57% (0.16%-2.06%)
ANM/UHN	110	31.43% (26.79%-36.47%)
MO	44	12.57% (9.50%-16.46%)
Family members	70	20.00% (16.15%-24.51%)
Self study	8	2.29% (1.16%-4.44%)

In our study, only 67% (234/350) of mothers aware about iron rich food in spite of most of them educated above primary school. About 31% of mothers received awareness through ANM/UHN (Table 11) and it is very unfortunate to see that only 13% of mothers received awareness through medical officer (Table 11).



PREVALENCE OF POSTPARTUM ANAEMIA IN THIS STUDY POPULATION (N=350)

In our study, the prevalence of anaemia among postpartum mothers is 31.71% (Fig.1) in Chennai as compared to whole urban Tamil Nadu, where it was 37.2 % as per NFHS-4 (2016-17).

The prevalence is less here because the mothers here are better educated, have good nutrition and well organized health care system. But even after 45 years of National Anaemia Control Program, we are in the category of severe public health problem due to anaemia.

As per NRHM, the following measure may be taken to reduce the prevalence of anaemia among postpartum mothers :

i) 100% early antenatal registration, regular screening for anaemia during antenatal visits,

ii) Track and treat anaemic mothers and better intranatal care and iron supplementation both antenatal and postnatal period,

iii) Screening for anaemia during postnatal period also.

Table 12: Distribution of clinical pallor in study population (N=350)

Methods of diagnosis of anaemia	Frequency	Percentage	95% CI
Haemo Cue method	111	31.71	
Pallor of conjunctiva	95	27.14	
Pallor of palm/ Nail bed	91	26.00	

In our study, anaemia was detected by decreased haemoglobin concentration, which was estimated by Haemo Cue Method and also by clinical examination like pallor of conjunctiva and pallor of palm. The Haemo Cue method was able pick up 32% of anaemia, 27% by pallor of conjunctiva and 26% by pallor of palm. This shows that to detect anaemia, we have to do comprehensive approach like both clinical and laboratory methods.

Table 13: Distribution of postpartum mothers taking IFA tablets during postnatal period in this study population (N=350)

WHETHER TAKING IFA TAB. NOW	Frequency	Percent	95% CI
YES	38	10.86%	8.01%-14.55%
NO	312	89.14%	85.45%-91.99%

In our study, IFA tab. supplementation received by postpartum mothers were only 11% (38/350) (Table 13). As per National Nutritional Anaemia Control Program, IFA supplementation should be given both ante natal and post natal mothers for 100 days. We have to a take initiative to make the mothers aware about the need of iron supplementation during postpartum period.

Table 14: Anaemia level during antenatal and postnatal period in this study population (N=350)

Anaemic state	Current estimate OF anaemia N (%)	P value
1st trimester		
Anaemic	87 (57.6)	<0.0001
Not anaemic	24 (12)	
2nd trimester		
Anaemic	104 (55)	<0.0001
Not anaemic	7 (2.39)	
3rd trimester		
Anaemic	100(65.36)	<0.0001
Not anaemic	11 (5.58)	

In our study, there was an association between anaemic state during ante natal and post partum period and this association is statistically significant (Table 14). So if we treat and track each anaemic mother, we can control anaemia and reduce prevalence of postpartum anaemia in our country

Table 15: Educational level and anaemic status in this study population (N=350)

Education group	Anaemic status	Frequency	Percent	95% CI	Odds ratio (95% CI)
Education above high school (n = 183)	Anaemic	37	20.22%	14.65%-26.77%	2.536 (1.617-3.977)
Education up to high school (n= 167)	Anaemic	74	44.31%	36.64%-52.19%	

Our study establishes the long known fact that, female education is more important in health of herself, the family and whole nation. The anaemia was more among mothers who studied only up to high school (OR 2.536 , 95% CI: 1.617-3.977).

Table 16: Socio economical status and anaemic level of this study population (N=350)

SES group	Anaemia status	Frequency	Per cent	95% CI	Odds ratio (95% CI)
Lower middle & lower class (N=270)	Anaemic	93	34.44%	29.01%-40.73%	1.909 (1.088-3.349)
Upper& upper middle class (N=80)	Anaemic	18	22.50%	11.91%-33.21	

In our study, the anaemia was more among mothers from lower middle and lower class

(OR: 1.909, 95% CI: 1.088-3.349) (Table 16). This is consistent with other study conducted in India (26. 27). This could be due to the fact that those from lower socioeconomic status (SES) lack the ability to purchase the quality or quantity of foods compared those from higher SES.

Table 17: Analysis of nutritional factors and anaemia in this study population (N=350)

Diet variable	Frequency of anaemia(%)	95% CI
Green leafy vegetable consumption Daily or weekly N=305 Occasionally N=45	83 (27.21) 28 (62.22)	22.52%-32.47% 46.54%-76.23%
Fruits eating Daily or weekly N=121	30 (24.79	17.40%-33.46%
Fish eating Daily or weekly N=279	82 (29.39	24.11%-35.11%
fish eating occasionally N=71	29(40.85	29.32%-53.16%

In our study, the anaemia was more among those mothers who consume green leafy vegetable in frequently and association of anaemia with less GLV consumption is statistically significant (Table 17).

TABLE 18: Analysis of bare foot walking and anaemia in this study population (N=350)

Variable	Anaemia status	Frequency	Percent
Bare foot walking Present N=54	Anaemic	33	61.11%
Bare foot walking absent N=296	Anaemic	78	26.35%

In our study, the anaemia is more in mothers who walk bare foot and it is about 61% (33/54) (Table 18). Helminthiasis is more prevalent in open air defecation and bare foot walking. So all peoples in particular pregnant and post natal mothers should be imparted health education regarding ill effects of open air defecation and bare foot walking.

Table 19: Analysis of Antenatal IFA intake and Anaemia in this study population (N=350)

Antenatal IFA tab.	Anaemia status	Frequency	Percentage	95% CI
Taken N=303	Anaemic	76	25.08%	20.53%-30.25%
Not taken N=47	Anaemic	35	74.47%	59.65%-86.06%

In our study, the risk of developing anaemia increased in postpartum mothers who did not receive IFA supplementation during pregnancy when compare with those who received IFA supplementation and 74% (35/47) of those who do not receive IFA supplementation developed anaemia (Table 19). This finding is consistent with the finding from studies in Vietnam and India (26, 27), which indicated that lack of iron supplementation is among the most significant risk factors for developing anaemia during pregnancy and postpartum period.

Through univariate analysis, this study was not able to find out any association with anaemia were type of family, type of house.

Tea/coffee drinking habits was not associated with anaemia in this study, may be due to, they were not drinking it along with other food.

Boiling of water for drinking also not associated with anaemia, may be due only small number family using it. There was no association found in this study with those who received JSY/ MRMBS scheme and anaemia. This finding may be studied further.

Table 20: Risk factors associated with Anemia in postpartum mothers: Adjusted odds ratios by multiple logistic regression analysis.

Variables	Unadjusted Odds ratio	Adjusted Odds ratio	95% CI for Adjusted OR	P value
Socioeconomic class				
Lower middle and lower	1.90	1.10	0.58 to 2.07	0.757
Upper and upper middle				
Education				
Up to High school	2.53	2.05	1.2 to 3.3	0.005
Higher secondary/ College				
Barefoot walking				
Yes	4.65	2.18	1.06 to 4.48	0.033
No				
Awareness about iron rich foods				
No	2.63	1.35	0.79 to 2.3	.26
Yes				
Green leafy vegetables intake				
Occasionally	4.42	2.3	1.05 to 5.08	0.036

Variables	Unadjusted Odds ratio	Adjusted Odds ratio	95% CI for Adjusted OR	P value
Daily/ weekly				
Number of IFA tablets intake				
Less than 100 tablets	8.36	4.98	2.1 to 11.3	0.000
100-200 tablets				

To examine the predictors, the significant variables like socioeconomic status, education, barefoot walking, unawareness about iron rich foods and number of IFA tablets intake were included in the logistic regression model.

Using entry method, the logistic regression model revealed that lower educational level up to High school (Adjusted odds ratio [AOR]=2.05), Barefoot walking (AOR=2.18), lesser intake of green leafy vegetables(AOR=2.3) and Lesser intake of IFA Tablets (AOR=4.98) were significantly associated with Anemia in postpartum mothers.

So to reduce prevalence of anaaemia among postpartum mothers, they have to avoid barefoot walking, daily intake of green leafy vegetables should be ensured.

They should follow the guide line of National Nutritional Anaemia Control Programe, IFA supplementation :

Prophylactic dose is 1 OD x 100 days

Therapeutic dose is 1 BD x 100 days

During both antenatal and postnatal period.

CONCLUSION

- The Prevalence of postpartum anaemia was 31.71% in this population at Chennai.
- Education level was good, more than 95% of mothers studied beyond primary school.
- The nuclear family was high in this population, it was about 58%.
- The most of the mothers were from lower middle and lower class as per modified Kuppusamy scale, it was about 77% in this study.
- Daily tea/coffee drinking was 77% of postpartum mothers
- The daily consumption of green leafy vegetables and fruits were less in this population
- The awareness about iron rich food was known only 77% in spite of their better educational level.
- During antenatal period, IFA supplementation received by 98.29% of mothers but 13% of mothers received lesser number of days and at the same time only 11% of mothers received IFA supplementation during postpartum period.

SUMMARY

- Anaemia is the most common nutritional deficiency disorder in the World. This condition occurs when the red blood cells do not carry enough oxygen to the tissues of the body.
- The prevalence of anaemia during pregnancy is widely recognized health problem throughout the world, particularly in the developing countries. But anaemia among post-natal women is not yet well studied.
- The Anaemia due to iron deficiency is the 7^{th} leading cause of years lost to disability in women and. Anaemia in women and children is a moderate public health problem in some countries like Indonesia, Sri Lanka but in India, it is a severe public health problem.
- The two most common causes of anaemia during pregnancy and puerperium are nutritional anaemia due to iron deficiency and blood loss. Iron is an essential element in formation of haemoglobin.
- Objectives of this study is 1). To Assess the Prevalence of Anaemia among Postpartum Mothers in Chennai. 2). To Identify the risk factors associated with postpartum anaemia in this

community- the risk factors studied are, a) Socio-demographic factors of socio-economic status and education. b) Nutritional factors and Environmental factors.c) Health care delivery factors.3) To measure the major contributing risk factors through regression analysis

- As per WHO(1972) defines anemia-regardless of its cause-as the presence of a Haemoglobin level less than 11 g/dl during first and third trimester of pregnancy and less than 10.5g/dl during second trimester of pregnancy and less than 10g/dl during postpartum period.
- Postpartum mothers: Defined as the period from delivery of the placenta to 42 days after delivery .
- As per NFHS-4(2015-16) results, in India, 45% of urban, 52.1% of rural and in total 50.3% of pregnant women were anaemic. In Tamil Nadu, 37.2% of urban, 52.1% of rural and in total 44.4% of pregnant women were anaemic.
- Iron metabolism :Full term infants begin life with 75 mg/kg body weight from mother in third trimester. The body iron content of normal adult men is 50mg/kg body weight or greater. In contrast, post pubertal women and pregnant, postpartum mothers; the average body iron content is 35mg/kg only .

- SOURCES AND CONTENT OF IRON: Diary product: Human milk 0.5mg/ Liter, Cow's milk 0. 02-0.3mg/ Liter (17)Food groups: a) Pulse 9-11 mg/100 g, b) Cereals 4-11mg/100g, c) Meats and Fish 10-25mg/100g, d) Banana 0.9mg/100g, e) Mango 1.3 mg/100g,f) Melon 7.5mg/100g(17)
- The total iron loss associated with pregnancy and lactation is approximately 1000mg therefore the recommended daily dietary allowance for iron in pregnancy is 27 mg instead of 8 mg in adult non pregnant women. Lactation requires a daily dietary allowance of 10 mg.
- So, during pregnancy 500 to 600 mg of iron is required in addition to 240-480 mg of iron conserved because of amenorrhea, 2.5 mg of iron/ per day in the early pregnancy, 5.5 mg of iron / day in the 20-32 weeks of pregnancy and 6-8 mg of iron/ day from 32 weeks onwards.
- Determinants of anaemia; Immediate causes; Iron deficiency, Other micronutrient deficiencies, Malaria, helminthes causing increased blood loss Inflammation due to multiple causes including malaria, helminthes, chronic infections; tuberculosis, HIV, etc.,Genetic disorders; hemoglobinopathies, G6PD deficiency

- Intermediate causes : Inadequate access or intake of nutrient-rich diets,Inadequate maternal & child care practices, Excess blood loss/ inadequate spacing of births, Unsafe water, poor hygiene and sanitation, Poor supply or demand of curative & preventive health services Basic causes ;Socio-cultural and economic conditions and policies, basic healthcare infrastructure, inequitable distribution of services, inadequate local evidence of etiology..
- Laboratory Diagnosis of Anaemia; Anaemia can be diagnosed by simple and inexpensive laboratory test. Haemoglobin Concentration, Blood Smear: Peripheral blood smear examination in differentiating various type of anaemia. Red cell indices: Measurement of red cell indices, though not essential as first time investigation, is useful in differentiating various types of anaemia. Most modern auto analyzer automatically report indices such as MCV, MCH, MCHC and Red cell distribution, Serum ferritin estimation.
- Management of anaemia: Treatment of underlying cause; Restoration of the haemoglobin concentration to normal levels; and Prevention and treatment of complication.
- National Nutritional Anaemia Prophylaxis Program. The National anaemia control program was launched in 1970 to prevent

nutritional anemia in mothers and children. Under this program, the expected and nursing mothers as well as acceptors of family planning are given one tablet of iron and folic acid containing 60 mg elementary iron which was raised to 100 mg elementary iron, however folic acid content remained same (0.5 mg of folic acid)

- 12-by-12 INITIATIVE FOR ANAEMIA CONTROL: A12-by-12 initiative was launched AIIMS ON April 24, 2007 with view to ensure that every child should have haemoglobin of 12 grams by the age of 12. This will go a long way in improving the health of the future parents .
- Prevention strategies: Anaemia due to iron deficiency, like most nutritional deficiencies of public health concern, is mainly a consequence of poverty. Prevention strategies must, if they are to be sustainable involve a wide range of sectors and organization. For example, the agriculture, health, commerce, industry, education and communication sectors. Efforts should be targeted to: Reduce poverty; Improve access to diversified diets; Improve health services and sanitation; and Promote better care and feeding practices .
- Methods and materials: Study Design: A community based cross-sectional study. Target population: Postpartum mothers. Study

population: Postpartum mothers, who reside in zone 11, Greater Chennai Corporation, Valasaravakkam, Chennai. Study area: Zone 11, Valasaravakkam, Chennai.

- Sample size:$4pq/L^2$; Prevalence of Postpartum mothers' anaemia from previous study is 44%, Significance level (alpha error) at 5% and Confidence level at 95%. Absolute precision 5.3 and 10% for non-responders, the sample size is 350.
- Haemoglobin estimation will be done by HemoCue Hb 301 System. This method was used during NFHS -4. Occupation, Education and Socio economical Status : Will be assessed using modified kuppusamy scale . Questionnaire (enclosed): A Semi - structured questionnaire will be used to collect information on socio demographic details and determinant of anaemia.
- STATISTICAL ANALYSIS:The data collected will be entered and analyzed using SPSS 21.0.1) Prevalence of anaemia presented as proportion with 95% CI. 2) Association of anaemia with other risk factor will be estimated by comparing anaemia prevalence between group with or without risk factors.3) A multivariate logistic regression model will be applied to study factor associated with anaemia

- In our study, the prevalence of anaemia among postpartum mothers is 31.71% (Fig.1) in Chennai as compared to whole urban Tamil Nadu, where it was 37.2 % as per NFHS-4 (2016-17). The prevalence is less here because the mothers here are better educated, have good nutrition and well organized health care system.

- Our study establishes the long known fact that, female education is more important in health of herself, the family and whole nation. The anaemia was more among mothers who studied only up to high school (OR 2.536 , 95% CI: 1.617-3.977).

- In our study, the anaemia was more among mothers from lower middle and lower class (OR: 1.909, 95% CI: 1.088-3.349) (Table 12). This is consistent with other study conducted in India (26. 27). This could be due to the fact that those from lower socioeconomic status (SES) lack the ability to purchase the quality or quantity of foods compared those from higher SES.

- In our study, there was an association between anaemic state during ante natal and post partum period and this association is statistically significant (Table 10). So if we treat and track each

anaemic mother, we can control anaemia and reduce prevalence of postpartum anaemia in our country.

- In our study, the risk of developing anaemia increased in postpartum mothers who did not receive IFA supplementation during pregnancy when compare with those who received IFA supplementation and 74% (35/47) of those who do not receive IFA supplementation developed anaemia (Table 15). This finding is consistent with the finding from studies in Vietnam and India (26, 27), which indicated that lack of iron supplementation is among the most significant risk factors for developing anaemia during pregnancy and postpartum period.

- Through univariate analysis, this study was not able to find out any association with anaemia were type of family, type of house, Tea/coffee drinking habits was not associated with anaemia in this study, may be due to, they were not drinking it along with other food . Boiling of water for drinking also not associated with anaemia, may be due only small number family using it. There was no association found in this study with those who received JSY/ MRMBS scheme and anaemia. This finding may be studied further.

The significant variables like socioeconomic status, education, barefoot walking, unawareness about iron rich foods and number of IFA tablets intake were included in the logistic regression model. Using entry method, the logistic regression model revealed that lower educational level up to High school (Adjusted odds ratio [AOR]=2.05), Barefoot walking(AOR=2.18), lesser intake of green leafy vegetables(AOR=2.3) and Lesser intake of IFA

LIMITATION

This study is a cross sectional study, so temporal association could not be elicited.

The quality and quantity of the nutrition intake is not measured in this study, so need further exploration.

There is no mechanism to find out regular availability and distribution of IFA.

Limited availability of skilled human resources, especially nurses.

Low coverage of services and of skilled staff posting among marginalised communities.

Inadequate supportive supervision of front-line service providers.

Low quality of training and skill building.

Lack of focus on improving quality of services.

Insufficient information, education and communication on key family practices.

RECOMMENDATION

Short term:

- All pregnancy should be registered within 12 weeks
- During Antenatal and postnatal visits, they should given regular health education regarding iron rich food consumption and IFA supplementation
- Health education regarding bare foot walking to be given to all women
- Making clear guideline for haemoglobin estimation during postpartum period also as in haemoglobin estimation done in antenatal period
- Family members and health care worker should that these women are taking IFA supplementation regularly

Long term:

- Health education regarding prevention and control of anaemia should imparted all adolescent girls
- Implement 12 by12 INITIATIVE in well organized manner
- Health education about nutrition to be included in school curriculum
- Improve the economy of the people
- Health worker should be sensitized and make them work towards elimination of postpartum anaemia.

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A COMMUNITY BASED CROSS SECTIONAL STUDY ON PREVALENCE OF ANAEMIA AMONG POSTPARTUM MOTHERS IN CHENNAI

QUESTIONNAIRE

S. No:

Personal details:

1)Name	2) Age	3)Address	4) Education	5) Occupation	Cell no.
			1. 2. 3. 4. 5. 6. 7.	1 2.	

B) Socio-demographic variables:

Family Members Name	Relationship	6)Education	7)Occupation	8)Income
		1. 2. 3. 4. 5. 6. 7.	1. 2. 3. 4. 5 6.	

9) Staying with husband: 1) Yes 2) No

10) Type of family: 1) Nuclear 2) Non-Nuclear

11) Per capita income:

12) Socio-economical status: Modified Kuppusamy Scale;

Nutrition details:

13) Do you drink tea/coffee: 1) Yes 2) No

S.No	Details	Daily	Weekly	Occasionaly
14	Green leafy veg.			
15	Dates and dry fruits			
16	Fruits(fresh)			
17	Fish			
18	Meat and poultry			

Environmental details:

19) Bare foot Walking	20)Type of House	21)Open Air defecation	22)Toilet Facility Available	23)Source of Water	24)Whether water Boiled
1) Yes 2) No	1) Pucca 2) kutcha	1) Yes 2) No	1) Yes 3) No	1) well water 2) metro water 3) mineral water 4) others	1) Yes 2) No

Pre/Antenatal details:

25)Age at menarche		
26) Menstrual cycle	Duration 1) Less than 3 days 2) 3 to 5 days 3) More than 5 days	Flow 1) Excess 2) Normal 3) Less
27)Age at marriage		
28)Age at first conception		
29) Interval between pregnancy		

30) What are the ill effects of anaemia: 1) Weakness 2) CCF 3) Doesn't know

31) Are you aware about iron rich food: 1) Yes 2) No

32) Who gave awareness to you :
1) AWW 2) ANM/UHN 3) MO 4) Family members 5) Nobody
6) Self study

33) Whether you have taken IFA TAB. DURING PREGNANCY:

1) Yes , if yes how many 2) No

36) Obstetrics score 25) para 26) live 27) abortion

37) Registration of current pregnancy	1) <12 weeks 2) 12-20 wks 3) >12w
38)	
30) No. of AN visit	
31) Deworming done	1) Yes 2) No
32)Hb. Estimation	1 2 3 4
33)Awareness about Hb. Status	1) Yes 2) no
34)Awareness about Iron rich food	1) Yes 2) no
35)Who given awareness to you	1) AWW 2)ANM 3)VHN4)MO5) other
36)Whether 100 days IFA tab. Taken	1)yes 2)no .if no why
37)Any therapeutic IFA tab given	If taken dosage/no.of days
38) Iron sucrose infusion done	1)yes 2) no
39)If yes no. of doses	
40)Any blood transfusion done	1)yes 2)no

49) Date of delivery:

50) Mode of delivery:1)Normal delivery 2)Forceps delivery 3) LSCS

51) Any excess bleeding during delivery :1) Yes 2) No

52) Any blood transfusion done: 1) Yes 2) No

Postpartum details:

Details			
53)When breast feeding initiated	1)Within one hour	2) 1-4 hours	3)More than 4 hou
54) Whether exclusive breast feeding	1) yes 2) no		
55)What is the nature of vaginal disch	1) red	2) pink	3) white/yellow
56)Whether taking IFA tab.	1) yes	2)no	
57)Whether aware about Need of Iron rich food	1)	2)	

Anthropometric measurement:

58) Weight in kgs:

59) Height in cms:

60) BODY MASS INDEX= Weight in kgs/ Height in cms'2

68) Haemoglobin estimation by Haemcue 301

MODIFIED KUPPSWAMY SCALE 2017

Education of head of family				**Score**
Profession or honours				7
Graduate or postgraduate				6
Intermediate or post high school diploma				5
High school certificate				4
Middle school certificate				3
Primary school certificate				2
Literate				1
Occupation of head of family				
Profession				10
Semi-profession				6
Clerical, Shop-owner				5
Skilled worker				4
Semi-skilled worker				3
Unskilled worker				2
Unemployed				1
Monthly income of family				
In 1976	In 1998	In 2007	In 2017 (January 2017 CPI)	
>=2000	13408	19844	>41430	12
1000-1999	6704-13407	9922-19843	20715-41429	10
750-999	5028-6703	7441-9921	15536-20714	6
500-749	3352-5027	4961-7440	10357-15535	4
300-499	2011-3351	2976-4960	6214-10356	3
101-299	677-2010	1002-2975	2092-6213	2
<=100	<676	<1001	<2091	1
Socioeconomic class				**Total score**
I	Upper			26-29
II	Upper middle			16-25
III	Lower middle			11-15
IV	Upper lower			5-10
V	Lower			<5

MASTER CHART KEY

A) S.No.

B) Name

C) Age

D) Residence :1) urban 2) Rural

E) Education :1) 2) 3) 4) 5) 6) 7)

F) Occupation: 1) House wife 2) Working

G) Husband education: 1) 2) 3) 4) 5) 6))7

H) Husband occupation: 1) 2) 3) 4) 5) 6)

I) Family income

J) Staying with husband : 1) Yes 2) No

K) Type of family: 1) Nuclear 2) Non nuclear

L) Per-capita income

M) SES : 1) Upper 2) Upper middle 3) Lower middle 4) Upper lower 5) lower

N) Do you drink tea/coffee : 1) Yes 2) No

O) Green leafy vegetable 1) Daily 2) Weekly 3) Occasionally

P) Dates and dry fruits 1) Daily 2) Weekly 3) Occasionally

Q) Fruits(fresh) 1) Daily 2) Weekly 3) Occasionally

R) Fish 1) Daily 2) Weekly 3) Occasionally

S) Meat/poultry 1) Daily 2) Weekly 3) Occasionally

T) Bare foot walking 1) Yes 2) No

U) Type of house 1) Pucca 2) Kutcha

V) Open air defecation 1) Yes 2) No

W) Toilet facility 1) Yes 2) No

X) Source of water 1) Well water 2) Metro water 3) Mineral water 4) Other

Y) Whether water boiled 1) Yes 2) No

Z) Age at menarche

AA) Menstrual cycle duration 1) <3days 2) 3-5 days 3) >5days

AB) Menstrual flow 1) Excess 2) Normal 3) Less

AC) Age at marriage

AD) Age at first conception

AE) Interval between pregnancy 1) <1YEAR 2) 1-3 YEARS 3) > 3 YEARS 0) Primi

AF) Ill effects of anaemia Is known 1) Yes 2) No

AG) Are you aware about iron rich food 1) Yes 2) No

AH) Who gave awareness about anaemia AND IRON RICH FOOD 1) AWW 2)ANM/UHN 3) MO 4) FAMILY 5) NOBODY 6) SELF STUDY

AI)Whether you have taken IFA during pregnancy 1) Yes 2) No

AJ) No. of days and dose

AK) Iron sucrose infusion received 1) Yes 2) No

AL) Any blood transfusion given 1) Yes 2) No

AM) Gravida

AN) Para

AO) live

AP) Abortion

AQ) Obstetrics score

AR) Time at registration of current pregnancy 1) <12wks 2) 12-20wks 3) >20wks

AS)No. of AN VISIT FOR CURRENT PREGNANCY 1) <3 2) 3-5 3) 6 and above

AT) Deworming done 1) Yes 2) No

AU) Hb. 1st trimester

AV) Hb. 2nd trimester

AW) Hb. 3rd trimester

AX) How many days since delivery now

AY) Mode of delivery 1) Normal 2) LSCS 3) Forceps

AZ) Any excess of bleeding during delivery 1) Yes 2) No

BA) Any blood transfusion after delivery 1) Yes 2) No

BB)Have you received JSY/MRMBS 1) Yes 2) No

BC)When breast feeding started 1) within 1 hour 2) 1-4 hours 3) >4 hours

BD)Whether exclusive breast feeding 1) Yes 2) No

BE)Nature of vaginal discharge now 1) red 2) pink 3) white

BF)Whether aware about iron rich food to be taken now 1) Yes 2) No

BG)Whether taking IFA now 1) Yes 2) No

BH)Weight in kg

BI)Height in cm

BJ)BMI

BK)Pallor of conjunctiva 1) Yes 2) No

BL)Pallor of palm/ Nail bed 1) Yes 2) No

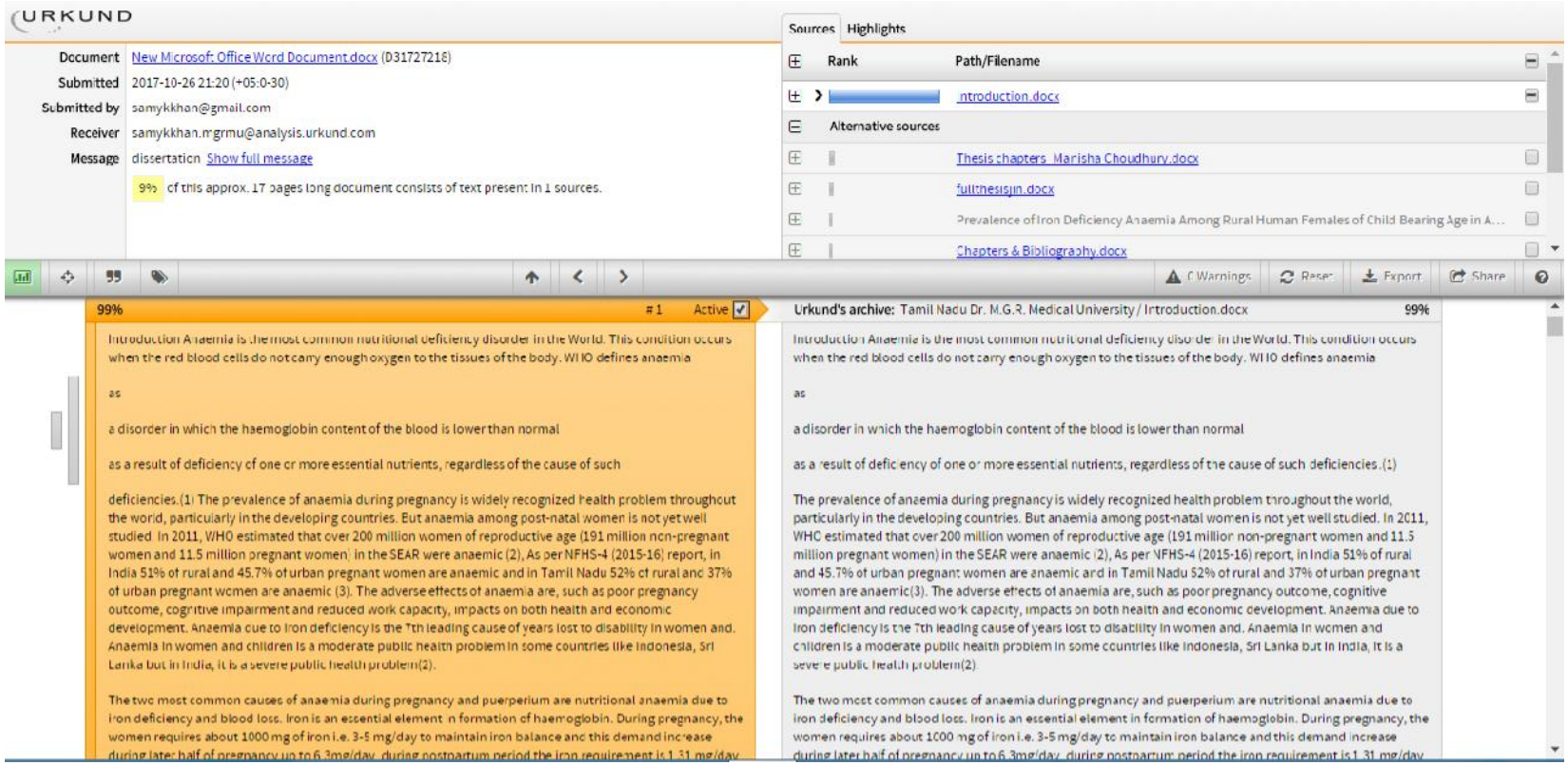
BM)Pedal oedema present 1) Yes 2) No

BN)Dyspnoea 1) present 2) absent

BO)CVS- EXAM; 1) murmur present 2) murmur absent

BP)Abdomen 1) Uterus palpable 2) Uterus not palpable

BQ)Haemoglobin estimation by Haemo Cue= value in g/dl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Introduction Anaemia is the most common nutritional deficiency disorder in the World. This condition occurs when the red blood cells do not carry enough oxygen to the tissues of the body. WHO defines anaemia
as
a disorder in which the haemoglobin content of the blood is lower than normal
as a result of deficiency of one or more essential nutrients, regardless of the cause of such
deficiencies.(1) The prevalence of anaemia during pregnancy is widely recognized health problem throughout the world, particularly in the developing countries. But anaemia among post-natal women is not yet well studied. In 2011, WHO estimated that over 200 million women of reproductive age (191 million non-pregnant women and 11.5 million pregnant women) in the SEAR were anaemic (2), As per NFHS-4 (2015-16) report, in India 51% of rural and 45.7% of urban pregnant women are anaemic and in Tamil Nadu 52% of rural and 37% of urban pregnant women are anaemic (3). The adverse effects of anaemia are, such as poor pregnancy outcome, cognitive impairment and reduced work capacity, impacts on both health and economic development. Anaemia due to iron deficiency is the 7th leading cause of years lost to disability in women and. Anaemia in women and children is a moderate public health problem in some countries like Indonesia, Sri Lanka but in India, it is a severe public health problem(2).
The two most common causes of anaemia during pregnancy and puerperium are nutritional anaemia due to iron deficiency and blood loss. Iron is an essential element in formation of haemoglobin. During pregnancy, the women requires about 1000 mg of iron i.e. 3-5 mg/day to maintain iron balance and this demand increase during later half of pregnancy up to 6.3mg/day, during postpartum period the iron requirement is 1.31 mg/day

INSTITUTIONAL ETHICS COMMITTEE
GOVT. KILPAUK MEDICAL COLLEGE,
CHENNAI-10
Protocol ID. No.02/2017 Meeting held on 03.03.2017
CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval "**A Cross Sectional Study of the Prevalence of Anaemia among Postpartum mothers in Chennai, Tamil Nadu** " submitted by Dr.Samykkhan.C, M.D.Community Medicine,PG Student, GKMC, Chennai 10.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

DEAN 22/3/17
Govt. Kilpauk Medical College,
Chennai-10.

28/3/17

ஆராய்ச்சி தகவல் தாள்

சென்னை கீழ்பாக்கம் அரசு மருத்துவக் கல்லூரி மருத்துவமனையில் ஆராய்ச்சி ஒன்று நடைபெற்றுவருகிறது. . ஒரு மூன்றாம் நிலை சுகாதார மையத்தில் என்.ஐ.எச்.எஸ்.எஸ்.மதிப்பீடு மற்றும் பார்த்தல் குறியீடு மூலம் ,இரத்த ஓட்ட தடையினால் ஏற்படும் பக்கவாதத்தில் முப்பது நாள் இறப்பு மற்றும் நோயாளிகளின் செயல்பாட்டு விளைவை முன்கூட்டியே அறிவதற்கான ஆய்வு

நீங்களும் இந்த ஆராய்ச்சியில் பங்கேற்க நாங்கள் விரும்புகிறோம். முடிவுகளை அல்லது கருத்துக்களை வெளியிடும் போதோ அல்லது ஆராய்ச்சியின் போதோ தங்களது பெயரையோ அல்லது அடையாளங்களையோ வெளியிடமாட்டோம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த ஆராய்ச்சியில் பங்கேற்பது தங்களுடைய விருப்பத்தின் பேரில் தான் இருக்கிறது. மேலும் நீங்கள் எந்நேரமும் இந்த ஆராய்ச்சியிலிருந்து பின்வாங்கலாம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

இந்த சிறப்புப் பரிசோதனைகளின் முடிவுகளை ஆராய்ச்சியின் போது அல்லது ஆராய்ச்சியின் முடிவில் தங்களுக்கு அறிவிப்போம் என்பதையும் தெரிவித்துக் கொள்கிறோம்.

ஆராய்ச்சியாளர் கையொப்பம் பங்கேற்பாளர் கையொப்பம்

தேதி:

INFORMATION TO PARTICIPANTS

Investigator : Dr SAMYKKHAN .C.

Name of the Participant:

Title : **A CROSS SECTIONAL STUDY OF THE PREVALENCE OF ANAEMIA AMONG POSTPARTUM MOTHERS IN CHENNAI, TAMILNADU**

You are invited to take part in this research study. We have got approval from the IEC. You will be asked to fill up a Questionnaire, and We would be asking you questions regarding Your Past and Personal History , so that appropriate preventive measures could be planned .

Date: Signature of the Investigator:

Place: Signature /thumb impression of the participant:

PATIENT CONSENT FORM

Study detail :

Study centre :

Patients Name :

Patients Age :

Identification Number :

Patient may check (√) these boxes

I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction. ☐

I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected. ☐

I understand that the ethical committee and the regulatory authorities will not need my permission to look at my health records ☐

However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from this study. ☐

I agree to take part in the above study and to comply with the instructions given during the study and faithfully cooperate with the study team and to immediately inform the study staff if I suffer from any deterioration in my health or well-being or any unexpected or unusual symptoms.

I hereby consent to participate in this study. ☐

Signature/thumb impression: Signature of investigator:

Patients Name and Address: Study investigator's Name:

S. No.	Name	Age	Residence	Education	Occupation	H. Education	H. Occupation	Family income	Staying with husband	Type of family	Per capita income	SES	Do you drink/coffee	Green leafy veg.	Dates and dry fruits	Fruits	Fish	Meat/poultry	Bare foot walking	Type of house	Open air defecation	Toilet facility	Source of water	Whether water boiled	Age at menarche	Menstrual cycle duration	Menstrual cycle flow	Age at marriage	Age at first conception	Interval between pregnancy	What are the ill effect of anaemia	Are you aware about iron rich food	Who gave awareness about anaemia and iron rich food
1	Mahalashkmi	25	1	5	1	4	4	10000	1	1	3333		1	2	2	3	3	3	1	1	2	1	4	2	13	1	2	19	20	1	3	2	5
2	Divya	22	1	5	1	4	4	20000	1	1	6666	3	1	2	3	3	3	3	2	1	2	1	3	2	14	2	2	19	19	2	1	1	4
3	Gomathy	30	1	3	1	3	3	20000	1	1	6666	3	1	2	1	3	2	2	1	1	2	1	2	2	13	2	2	27	28	3	1	1	3
4	Magia	22	1	5	1	5	4	20000	1	1	10000	3	2	2	1	3	2	3	2	1	2	1	1	2	14	2	2	21	21	0	1	1	6
5	Chitra	23	1	4	1	6	3	20000	1	1	10000	2	1	2	2	2	2	2	2	1	2	1	2	1	14	2	2	22	22	0	1	1	3
6	Chitra A	23	1	6	1	6	3	12000	1	1	6000	3	1	3	3	3	2	2	2	1	2	1	2	2	13	2	2	22	22	0	3	2	5
7	Kumutha	34	1	4	1	4	5	15000	1	1	5000	3	1	2	3	2	3	2	2	1	2	1	1	2	15	2	2	29	30	3	1	2	5
8	Vanathi	26	1	5	1	5	4	12000	1	1	6000	3	1	1	2	2	2	2	2	1	2	1	1	2	14	2	2	23	25	0	1	1	4
9	Shalini	35	1	4	2	4	2	15000	1	1	5000	2	2	2	3	1	1	2	2	1	2	1	2	2	14	2	2	21	25	3	3	1	4
10	Sreemathy	36	1	4	2	5	4	20000	1	1	6666	3	2	2	2	3	2	2	2	1	2	1	1	2	15	2	2	20	21	3	1	1	4
11	Saroja	28	1	4	1	4	5	12000	1	1	4000	3	1	2	2	2	2	2	1	2	2	1	1	2	14	2	2	19	20	1	1	2	5
12	Keerthi	28	1	1	1	3	6	12000	1	1	3000	3	1	1	2	2	2	2	1	1	2	1	1	2	13	2	2	20	21	1	3	2	5
13	Shamira banu	28	1	4	1	3	6	12000	1	1	3000	3	1	2	3	3	2	2	2	1	2	1	1	2	13	2	2	20	21	1	1	2	5
14	Kanchana	29	1	6	1	5	5	10000	1	1	3333	3	1	2	2	2	2	2	2	1	2	1	1	2	14	2	2	23	24	1	1	1	6
15	Parameswari	21	1	6	1	5	4	12000	1	2	4000	3	1	1	2	1	2	2	2	1	2	1	2	2	13	2	2	20	21	1	1	1	2
16	Sundari	25	1	3	1	3	6	9000	1	1	3000	4	1	1	1	1	1	2	1	1	2	1	2	2	14	2	2	20	21	1	3	2	5
17	Naserabanu	32	1	6	1	7	5	12000	1	2	6000	3	1	1	1	1	2	2	2	1	2	1	2	2	14	3	2	29	30	1	1	1	4
18	Punithavalli	27	1	5	1	5	5	12000	1	2	3000	3	2	1	3	3	2	2	2	1	2	1	1	2	13	2	2	22	23	3	3	1	4
19	Sarasu	24	1	5	1	5	6	12000	1	2	3000	3	1	2	3	3	2	2	2	1	2	1	1	2	13	2	2	18	24	3	1	1	2
20	Jeyanthi	32	1	4	1	4	6	10000	1	1	3333	4	2	2	3	3	2	2	2	1	2	1	2	2	13	2	2	22	23	3	1	1	2
21	Shahena	21	1	4	1	3	6	15000	1	2	3000	4	1	1	1	3	1	2	1	1	2	1	2	2	14	2	2	17	18	2	1	1	2
22	Salsa	24	1	5	1	3	6	12000	1	2	3000	4	1	1	3	3	2	2	1	1	2	1	2	2	13	2	2	18	19	3	3	2	5
23	Priya	24	1	5	1	5	6	12000	1	1	3000	3	1	1	2	2	2	2	2	1	2	1	2	2	14	2	2	20	21	2	1	1	3
24	Deepa	34	1	6	1	5	2	40000	1	2	10000	2	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	30	31	1	1	1	3
25	Parvathi	21	1	5	1	3	6	15000	1	2	3000	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	3
26	Backyalakshmi	28	1	7	2	6	2	55000	1	1	18333	1	1	1	2	1	2	2	2	1	2	1	2	2	13	2	2	24	25	2	1	1	6
27	Vimala	30	1	3	2	5	4	10000	1	1	5000	3	1	2	3	2	2	2	2	2	2	1	2	2	14	3	2	21	28	0	1	1	4
28	Rebaca jasmine	25	1	4	1	6	1	20000	1	1	6666	2	1	1	1	1	2	2	2	1	1	2	15	2	2	21	22	3	3	1	4
29	Velankanni	25	1	6	1	6	4	12000	1	1	4000	3	2	3	1	3	3	2	2	2	2	1	2	2	13	1	2	19	20	3	1	1	4
30	Valarmathi	26	1	6	1	5	4	25000	1	1	#####	2	2	2	3	2	2	2	2	1	2	1	2	2	14	1	2	25	25	0	1	1	6
31	Kanimozhi	26	1	3	1	4	6	10000	1	2	3333	4	2	1	2	2	3	3	2	1	2	1	2	2	14	1	2	25	26	0	1	1	4
32	Reka	25	1	5	1	4	5	10000	1	2	2500	3	1	2	3	2	2	2	2	1	2	1	2	2	15	2	2	22	22	3	3	1	4
33	Saranya	30	1	4	1	6	4	10000	1	1	3333	3	2	3	2	2	2	3	1	1	2	1	2	2	14	2	2	24	24	0	3	2	5
34	Karthika	20	1	4	1	4	4	12000	1	2	3333	3	1	2	3	3	3	2	1	1	2	1	2	2	14	2	2	19	20	1	3	2	5
35	Sandya	23	1	3	1	4	4	12000	1	2	3000	3	2	2	3	3	2	2	2	1	2	1	2	2	13	3	2	20	21	1	1	1	2
36	Malarvizhi	20	1	4	2	4	4	10000	1	2	3333	3	2	2	3	3	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	2
37	Selvamani	28	1	3	1	3	6	10000	1	1	3333	4	2	3	3	3	2	2	1	1	2	1	2	2	14	3	2	24	25	2	3	2	5
38	Punithavathy	27	1	6	1	4	6	12000	1	1	3000	4	1	1	2	2	2	2	2	1	2	1	2	2	13	2	2	22	24	2	1	1	3
39	Elizabeth	28	1	6	1	5	3	25000	1	1	5000	2	1	2	2	2	3	3	2	1	2	1	2	2	13	2	2	23	24	1	1	1	3
40	Pavithra	20	1	5	1	3	4	24000	1	2	4000	2	1	1	1	3	3	3	2	1	2	1	2	2	14	3	3	19	20	1	1	1	2
41	Suba	22	1	4	1	4	3	12000	1	1	6000	2	1	3	3	2	2	2	2	1	2	1	2	2	14	1	2	21	22	0	1	1	2
42	Deepika	20	1	5	1	3	6	36000	1	2	6000	2	1	1	1	2	2	2	2	1	2	1	3	2	13	2	2	19	20	0	1	1	2
43	Vijayalakshmi	20	1	5	1	5	4	12000	1	2	4000	3	1	3	3	2	2	2	2	1	2	1	2	2	13	2	2	19	20	0	1	1	2
44	Mariammal	24	1	5	1	3	4	12000	1	1	3000	3	2	2	2	2	2	2	2	1	2	1	3	2	14	2	2	19	20	0	1	1	2
45	Nevetha	22	1	5	1	4	6	12000	1	2	3000	4	1	1	2	2	2	2	2	1	2	1	3	2	14	2	2	20	21	0	1	1	2
46	Sathya	21	1	4	1	4	3	16000	1	2	4000	2	1	1	3	3	3	3	2	1	2	1	2	2	13	2	2	19	20	0	1	1	2
47	Devi	23	1	3	1	3	6	10000	1	1	3333	4	1	3	3	2	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	2
48	Seventhi	24	1	4	1	4	3	20000	1	2	4000	2	2	1	1	1	2	2	2	1	2	1	3	2	14	2	2	21	23	0	1	1	2
49	Pushpa	20	1	5	1	3	6	10000	1	1	5000	4	2	1	2	3	2	2	2	1	2	1	1	2	13	2	2	18	19	0	3	2	5

50	Sudha	27	1	4	1	5	5	15000	1	1	5000	4	1	1	3	3	3	2	2	1	2	1	3	2	14	2	2	21	22	1	1	1	2
51	Vijayalakshmi	26	1	6	2	6	4	15000	1	1	5000	3	1	3	2	3	3	3	2	1	2	1	2	2	13	2	2	23	24	1	1	1	4
52	Clara	26	1	4	1	4	4	15000	1	1	5000	3	1	2	3	3	3	2	2	2	2	1	2	2	14	2	2	19	20	3	3	2	5
53	Suganthi	25	1	5	1	4	4	12000	1	2	3000	3	1	2	3	3	2	2	2	1	2	1	2	2	15	2	2	19	19	3	3	2	5
54	Geethalakshmi	25	1	5	2	4	4	15000	1	2	3000	3	1	3	3	3	2	2	2	1	2	1	2	2	14	2	2	21	22	3	3	2	5
55	Lakshmi	30	1	5	1	6	4	12000	1	2	3000	3	1	2	3	2	2	3	2	2	2	1	2	2	14	1	2	23	30	0	3	1	2
56	Akila	25	1	7	1	6	4	15000	1	2	5000	3	1	2	3	3	3	2	2	1	2	1	2	2	13	2	2	24	24	0	3	1	4
57	Pavithra	20	1	5	1	4	4	15000	1	2	3000	3	1	2	3	2	2	2	2	2	2	1	1	2	13	2	2	19	19	0	3	2	5
58	Sathya	31	1	3	1	5	3	25000	1	2	5000	2	1	2	3	3	2	2	2	1	2	1	1	2	15	1	2	21	22	3	3	2	5
59	Vanitha	30	1	3	1	5	4	15000	1	1	5000	3	1	2	3	3	2	2	2	1	2	1	1	2	14	1	2	22	24	2	3	2	5
60	Amutha	28	1	6	2	6	3	20000	1	2	5000	2	2	2	1	1	3	2	2	1	2	1	2	1	14	2	2	25	27	0	3	2	5
61	Lakshmi	28	1	2	1	4	4	15000	1	1	5000	3	3	3	3	3	2	2	1	2	2	1	2	2	16	1	2	25	28	3	3	2	5
62	Padma	21	1	4	1	3	4	15000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	12	3	2	20	20	0	3	2	5
63	Arokia mary	34	1	5	2	4	4	15000	1	1	5000	3	2	2	3	3	3	3	2	1	2	1	2	2	16	2	2	27	31	2	3	2	5
64	Seetha	26	1	5	1	3	4	15000	1	1	5000	3	1	2	3	3	2	2	2	1	2	1	2	2	13	1	2	21	22	3	1	1	2
65	Davamani	22	1	4	1	1	4	12000	1	1	6000	4	2	2	3	2	2	2	2	2	2	1	1	2	12	2	2	19	22	0	3	2	5
66	Geeta	26	1	4	1	4	5	12000	1	1	4000	3	1	2	3	3	2	3	2	1	2	1	1	2	13	2	2	21	22	2	3	2	5
67	Gowri	25	1	4	1	4	4	12000	1	1	4000	3	1	3	3	2	2	2	2	1	2	1	2	2	13	3	2	22	23	2	3	2	5
68	Anusuya	27	1	5	1	5	4	15000	1	1	7500	3	1	2	2	3	2	2	2	1	1	2	2	2	14	1	2	26	26	0	3	2	5
69	Radha	25	1	5	1	6	4	12000	1	1	4000	3	1	2	3	3	2	2	2	1	2	1	2	2	13	3	2	19	19	3	1	1	2
70	Bhavani	21	1	3	1	4	5	9000	1	2	3000	4	1	2	3	3	2	2	2	1	2	1	2	2	14	2	3	18	21	0	3	1	2
71	Gomathy	32	1	3	1	4	5	12000	1	1	4000	3	1	3	3	3	3	2	2	1	2	1	2	2	17	2	2	23	24	3	3	1	2
72	Muthu lakshmi	27	1	3	1	3	3	18000	1	1	6000	3	2	2	3	2	2	3	2	1	2	1	1	2	17	2	2	23	24	3	3	1	2
73	Jecintha	20	1	5	1	4	3	20000	1	2	5000	2	1	2	3	2	2	2	2	1	2	1	1	1	15	3	2	19	19	1	1	1	3
74	Saranya	27	1	4	1	4	4	12000	1	1	4000	3	1	2	3	3	3	2	2	1	2	1	2	2	15	2	2	23	24	0	3	1	2
75	Muthu lakshmi	23	1	5	1	5	4	12000	1	2	3000	3	3	3	3	3	2	2	1	2	2	1	2	1	14	2	2	21	21	2	3	2	5
76	Priya	26	1	7	1	4	6	12000	1	1	4000	4	1	2	3	2	2	2	2	1	2	1	1	2	15	2	2	21	21	3	1	1	4
77	Udayapriya	24	1	6	1	5	3	15000	1	2	3000	3	2	2	3	3	3	2	2	1	2	1	2	2	10	1	2	23	23	0	1	1	4
78	Aruna	25	1	6	1	5	5	10000	1	2	3333	3	2	1	3	3	2	2	2	2	2	1	2	2	14	2	2	24	24	0	1	1	4
79	Monika	22	1	4	1	5	6	10000	1	1	5000	3	1	2	2	2	2	2	2	1	2	1	2	2	13	2	2	21	21	0	3	2	5
80	Shyla	23	1	5	1	4	4	12000	1	2	3000	3	2	1	3	2	2	2	2	1	2	1	2	2	15	1	2	18	19	1	1	2	5
81	Jasmine vinu	31	1	6	1	3	4	15000	1	1	5000	3	1	1	3	3	2	2	2	1	2	1	2	2	17	2	2	27	27	3	1	2	5
82	Saranya	20	1	6	1	7	2	25000	1	2	5000	1	1	1	3	3	2	2	2	1	2	1	1	2	15	1	2	18	19	0	1	1	2
83	Santha	33	1	4	1	3	6	10000	1	2	3333	4	2	1	3	3	2	2	2	2	2	1	2	1	14	1	2	18	19	3	3	2	5
84	Jeyanthi	26	1	4	1	3	4	15000	1	1	5000	4	1	1	3	2	2	2	2	1	2	1	1	2	16	2	2	19	20	2	3	2	5
85	Mala	23	1	4	1	4	5	12000	1	2	3000	3	2	1	3	3	2	2	2	1	2	1	1	2	14	2	1	18	19	3	1	1	4
86	Lakshmi	22	1	5	1	5	2	18000	1	2	4500	2	1	1	3	3	2	2	2	1	2	1	2	2	14	1	2	21	22	0	1	1	4
87	Prathiba	27	1	4	1	4	3	16000	1	1	8000	2	2	1	3	1	2	2	2	1	2	1	2	1	13	3	2	26	26	0	3	1	2
88	Jamina	24	1	4	1	4	5	12000	1	2	3000	3	2	1	3	3	2	2	2	1	2	1	1	2	14	2	2	23	23	0	1	1	2
89	Priyadarshini	25	1	7	1	7	3	15000	1	1	7500	2	1	2	2	2	2	2	2	1	2	1	3	2	15	2	2	25	25	0	1	1	2
90	Kanimozhi	29	1	3	1	4	4	12000	1	2	3000	3	1	1	2	3	2	2	2	1	2	1	2	2	12	2	1	24	25	2	1	1	3
91	Uzma	31	1	6	1	4	5	12000	1	1	12000	3	1	1	3	3	3	2	2	1	2	1	1	2	17	2	2	23	24	3	3	1	2
92	Uma	27	1	3	1	4	5	12000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	25	26	2	1	1	3
93	Priya	24	1	5	1	5	4	12000	1	1	4000	3	1	1	3	2	2	2	2	1	2	1	1	1	14	2	2	20	21	1	1	1	2
94	Catherine	28	1	5	1	5	3	18000	1	1	6000	2	1	1	2	2	2	2	2	1	2	1	1	1	13	2	2	24	24	3	1	1	2
95	M.Mala	26	1	7	1	4	4	15000	1	2	5000	3	1	1	1	2	2	3	2	1	2	1	2	2	17	2	2	25	25	0	1	1	4
96	Vincent ruby	27	1	3	1	4	5	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	2	2	16	2	2	19	21	2	3	1	2
97	Dhanalakshmi	20	1	5	1	6	1	24000	1	2	6000	1	1	1	1	1	2	2	2	1	2	1	2	2	13	2	2	19	20	0	3	1	4
98	Vasuki	31	1	2	1	4	4	15000	1	1	5000	3	1	1	3	2	2	2	2	1	2	1	1	2	14	1	2	25	26	0	3	1	2
99	Padma	21	1	1	1	1	6	12000	1	1	6000	4	2	1	3	3	3	2	2	2	2	1	2	2	15	2	2	17	18	3	3	2	5
100	Rajalakshmi	22	1	4	1	4	4	12000	1	1	6000	3	1	1	2	3	2	2	2	1	2	1	2	2	14	2	2	21	21	0	1	1	4
101	Manjumalar	23	1	5	1	3	4	21000	1	2	5250	2	1	1	3	3	3	2	2	1	2	1	2	2	13	2	2	20	21	1	3	1	3
102	Selvarani	22	1	6	1	5	3	20000	1	1	10000	2	2	2	1	1	3	3	2	2	1	2	1	2	14	2	2	19	21	0	1	1	2
103	Solomi	25	1	6	1	5	4	18000	1	1	9000	3	1	1	3	3	3	2	2	1	2	1	2	2	14	2	2	23	24	0	1	1	2

104	Muthu valli	23	1	5	1	6	3	15000	1	1	7500	2	1	1	2	2	3	2	2	1	2	1	2	2	13	2	2	22	22	0	1	1	2
105	Easwari	26	1	5	1	3	3	12000	1	1	4000	3	1	1	1	1	2	2	2	1	2	1	1	2	14	2	2	20	21	3	1	1	4
106	Gajalakshmi	22	1	5	1	4	4	15000	1	1	5000	3	1	1	2	3	2	2	2	1	2	1	2	2	11	2	2	19	19	2	1	1	4
107	Gomathi	27	1	4	1	3	4	15000	1	1	5000	3	1	2	3	2	2	2	1	2	1	2	2	2	12	2	2	21	22	3	1	1	2
108	Sabeetha	29	1	5	1	5	2	18000	1	1	6000	2	1	1	3	3	2	2	2	1	2	1	2	2	15	2	2	25	26	3	1	1	4
109	Reka	31	1	7	1	6	2	24000	1	1	8000	1	1	1	1	1	2	2	2	1	2	1	2	2	13	2	2	25	26	3	1	1	4
110	Dhanalakshmi	25	1	6	1	5	3	12000	1	1	6000	3	1	1	3	1	2	2	2	1	2	1	2	2	16	3	2	24	27	0	1	1	3
111	Radhika	22	1	2	1	2	6	12000	1	1	6000	4	1	1	2	2	3	3	2	1	2	1	2	2	14	2	2	21	21	0	3	2	5
112	Priya	24	1	5	1	6	4	16000	1	1	8000	2	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	22	23	0	1	1	4
113	Meena	24	1	5	1	6	4	16000	1	2	4000	3	2	3	3	3	2	2	1	1	2	1	2	2	14	2	2	22	23	0	3	2	5
114	Amutha	23	1	4	1	4	4	12000	1	1	6000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	22	23	0	1	1	2
115	Renuka	23	1	5	1	3	4	15000	1	2	5000	3	1	1	2	2	2	2	2	1	2	1	2	2	12	2	2	21	22	0	1	2	5
116	Indu	23	1	3	1	4	4	12000	1	1	4000	3	1	1	3	3	2	2	2	2	2	1	2	2	14	2	2	20	21	2	1	1	2
117	Adhilashmi	27	1	3	1	6	4	15000	1	1	5000	3	1	1	3	3	2	2	2	1	2	1	1	2	14	1	2	25	26	1	1	1	4
118	Bhuvaneswari	27	1	6	1	5	2	18000	1	1	6000	2	1	1	3	2	2	2	2	1	2	1	2	2	13	2	2	21	21	3	1	1	4
119	Deepa	22	1	5	1	4	4	18000	1	2	4500	3	2	3	2	2	3	2	1	1	2	1	2	2	15	2	2	19	19	3	3	2	5
120	Senthamildevi	25	1	6	1	5	4	12000	1	1	4000	3	1	1	2	2	2	2	2	1	2	1	2	2	13	2	2	22	23	3	1	1	4
121	Dillirani	30	1	3	1	3	4	12000	1	1	4000	3	1	1	3	3	3	3	2	1	2	1	2	2	14	2	2	25	26	3	3	1	2
122	Elakia	28	1	5	1	6	3	24000	1	2	6000	2	2	2	3	3	2	2	2	1	2	1	2	2	13	3	2	28	28	0	3	2	5
123	Latha	26	1	5	1	4	4	16000	1	1	8000	3	1	1	2	2	2	2	2	1	2	1	2	2	14	2	2	25	25	0	1	1	3
124	Nagavalli	21	1	4	1	6	4	12000	1	1	6000	3	1	1	3	3	2	2	1	1	2	1	3	2	13	2	2	20	21	1	1	1	2
125	Divya	23	1	5	1	4	6	12000	1	2	4000	4	2	1	3	3	3	3	1	1	2	1	3	2	14	2	2	20	21	1	1	1	2
126	Suguna	26	1	4	1	3	4	10000	1	2	3333	4	1	1	3	3	2	2	1	1	2	1	2	2	13	2	2	24	25	1	3	1	2
127	Arokiya	21	1	4	1	3	6	10000	1	2	3333	4	1	1	3	3	2	2	2	1	2	1	4	2	14	2	2	21	22	1	1	1	2
128	Abirami	22	1	5	1	5	5	10000	1	1	3333	3	1	1	3	3	2	2	1	1	2	1	3	2	14	2	2	18	19	1	1	1	2
129	Papathi	36	1	3	1	4	5	12000	1	1	3333	3	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	25	26	3	1	1	2
130	Parimala	19	1	6	1	5	5	14000	1	2	4000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	18	19	0	1	1	2
131	Elavarasi	25	1	4	1	4	6	12000	1	1	4000	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	20	21	3	3	2	5
132	Suganthi	25	1	4	1	4	6	10000	1	1	3333	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	20	21	3	3	2	5
133	Indumathi	23	1	3	1	3	6	10000	1	1	5000	4	2	3	3	3	2	2	1	2	2	1	2	2	15	2	2	21	22	2	3	2	5
134	Kalpana	32	1	5	1	6	4	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	3	2	15	2	2	26	27	3	1	1	2
135	Preethi	24	1	6	1	4	4	18000	1	1	6000	3	1	3	3	3	2	2	2	1	2	1	3	2	12	2	2	21	23	0	1	1	3
136	Anitha	20	1	6	1	4	6	20000	1	2	5000	4	1	1	3	3	2	2	2	1	2	1	3	2	13	2	2	19	20	1	1	1	3
137	Kokila	26	1	4	1	3	6	10000	1	1	3333	4	2	3	3	3	2	2	1	1	2	1	3	2	12	2	2	23	24	2	3	2	5
138	Lakshmi	21	1	5	1	6	3	24000	1	2	6000	2	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	20	21	0	1	1	3
139	Mohanavalli	21	1	5	1	6	3	18000	1	2	6000	2	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	20	21	0	1	1	3
140	Kaviya	29	1	4	1	5	4	20000	1	2	5000	3	1	1	3	3	3	2	2	1	2	1	2	2	14	2	2	23	24	3	1	1	3
141	Abirami	30	1	4	1	5	4	18000	1	2	4500	3	1	1	3	3	3	2	2	1	2	2	13	2	2	24	24	3	1	1	3
142	Sangeetha	23	1	5	1	5	3	24000	1	2	4000	2	1	1	3	3	2	2	2	1	2	1	3	2	15	2	2	19	20	1	1	1	4
143	Chitra	29	1	3	1	1	6	10000	1	2	2500	4	1	1	3	3	2	2	1	1	2	1	3	2	14	2	2	28	29	0	1	1	3
144	Hachi	20	1	4	1	4	4	16000	1	2	4000	3	1	1	3	3	2	2	1	1	2	1	3	2	12	2	2	18	19	0	1	1	2
145	Mohanasundari	24	1	6	1	4	4	20000	1	2	4000	3	1	1	3	3	2	2	2	2	2	1	2	2	13	2	2	23	23	0	1	1	1
146	Radhika	31	1	6	1	3	4	12000	1	1	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	21	22	3	3	2	5
147	Padma	25	1	1	1	1	6	10000	1	2	8000	4	1	2	3	3	2	2	2	1	2	1	2	2	13	2	2	21	22	3	3	2	5
148	Ravitha	29	1	4	1	4	5	10000	1	1	3333	3	1	1	3	3	2	2	1	1	2	1	3	1	13	2	2	24	24	2	3	1	2
149	Divya	24	1	5	1	4	5	12000	1	2	3000	3	2	1	3	3	2	2	2	2	2	1	2	1	13	2	2	22	23	0	3	2	5
150	Tamilarasi	31	1	4	1	4	4	15000	1	2	5000	3	1	1	3	3	2	2	2	2	2	1	2	2	13	2	2	19	19	0	3	1	2
151	Punitha	22	1	4	1	4	4	12000	1	1	6000	3	2	1	3	3	2	2	2	2	2	1	2	1	14	2	2	21	22	0	3	2	5
152	Selvarani	22	1	6	1	5	3	15000	1	2	3000	3	1	2	2	3	3	2	2	1	2	1	2	2	15	2	2	19	21	0	1	1	2
153	Sarasam	21	1	2	1	3	6	10000	1	2	3333	4	1	1	2	3	3	2	2	1	2	1	2	2	14	2	2	21	21	0	3	2	5
154	Devi	30	1	4	1	5	2	20000	1	2	5000	2	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	25	30	0	1	1	3
155	Saranya	18	1	2	1	1	6	10000	1	1	3333	4	1	1	3	3	3	2	1	1	2	1	2	1	13	2	2	16	17	0	3	2	5
156	Revathi	21	1	5	1	5	3	18000	1	1	6000	3	1	1	3	3	3	2	1	1	2	1	2	1	13	2	2	18	20	0	3	2	5
157	Sathyakala	19	1	4	1	6	3	24000	1	2	6000	2	3	2	3	3	3	2	2	1	2	1	2	1	13	2	2	15	19	0	3	1	4

158	Lakshmi	26	1	6	1	6	1	24000	1	1	8000	1	1	1	3	3	2	2	2	1	2	1	1	2	14	2	2	23	23	3	1	1	4
159	Malinda	19	1	5	1	7	2	30000	1	1	15000	1	1	2	3	3	2	2	2	1	2	1	2	1	13	2	2	18	19	0	3	2	5
160	Priyanka	22	1	4	1	4	4	15000	1	1	7500	3	1	2	3	3	2	2	2	1	2	1	2	1	14	2	2	21	22	0	3	2	5
161	Anusuya	20	1	4	1	4	5	15000	1	1	7500	3	1	1	2	2	2	2	2	1	2	1	3	2	8	2	2	19	20	0	3	2	5
162	Parameswari	22	1	6	1	5	3	30000	1	1	7500	2	1	1	1	1	2	3	2	1	2	1	2	1	13	2	2	21	22	0	3	2	5
163	Sandya	28	1	4	1	6	5	18000	1	1	6000	3	2	3	2	2	2	2	1	1	2	1	2	2	13	3	2	22	24	3	3	2	5
164	Vasanthi	27	1	5	1	6	2	24000	1	2	6000	3	2	2	1	3	2	2	2	1	2	1	2	2	13	2	2	26	26	0	3	1	2
165	Geetha	28	1	3	1	4	4	12000	1	2	3000	3	1	1	1	3	2	2	2	1	2	1	2	2	13	3	2	26	27	2	1	1	2
166	Nagalakshmi	24	1	5	1	5	4	15000	1	1	5000	3	1	3	3	3	3	2	2	1	2	1	1	2	12	1	2	19	20	2	3	2	5
167	Nandini	20	1	4	1	3	4	15000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	1	2	15	2	2	18	19	0	3	2	5
168	Meena	24	1	4	1	3	4	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	1	2	11	2	2	19	19	0	3	1	2
169	Sabitha	28	1	4	1	4	5	12000	1	2	4000	3	1	1	3	3	2	2	2	1	2	1	2	2	12	2	2	27	27	0	3	2	5
170	Sandya	30	1	7	1	6	3	30000	1	2	6000	2	1	1	3	3	2	2	2	1	2	1	1	2	14	2	2	26	26	3	1	1	4
171	Sohana	22	1	5	1	5	4	15000	1	2	5000	3	1	1	3	3	2	3	2	1	2	1	2	2	14	3	2	21	22	0	1	1	4
172	Saranya	22	1	6	1	6	3	30000	1	2	6000	3	1	1	3	3	2	2	2	1	2	1	3	2	17	2	2	19	19	3	1	1	4
173	Salima	22	1	5	1	2	6	12000	1	1	6000	4	1	1	3	3	2	2	2	1	2	1	1	2	13	2	2	18	19	2	1	1	3
174	Kanimozhi	23	1	3	1	4	6	10000	1	1	3333	4	1	1	3	3	2	2	2	1	2	1	2	2	12	2	2	22	23	0	3	2	5
175	Nagalakmi	22	1	4	1	6	3	12000	1	1	4000	2	1	2	3	3	2	2	2	1	2	1	2	2	13	2	2	22	22	0	1	1	2
176	Regitha	32	1	5	1	4	3	24000	1	1	8000	2	1	2	3	3	2	2	2	1	2	1	3	1	14	2	2	27	27	3	1	1	3
177	Jonhsirani	30	1	3	1	4	3	18000	1	1	6000	2	2	1	3	3	2	2	2	1	2	1	2	1	12	2	2	28	29	0	1	1	2
178	Sonia	23	1	4	1	4	4	15000	1	1	5000	3	1	1	1	3	2	2	2	1	2	1	2	1	15	2	2	21	22	0	1	1	2
179	Sunitha	23	1	4	1	4	4	12000	1	1	6000	3	1	1	1	3	2	2	2	1	2	1	2	1	14	2	2	22	23	0	1	1	2
180	Amutha valli	25	1	5	1	4	4	10000	1	1	3333		1	2	2	3	3	3	1	1	2	1	4	2	13	1	2	19	20	1	3	2	5
181	Malar vizhi	22	1	5	1	4	4	20000	1	1	6666	3	1	2	3	3	3	3	2	1	2	1	3	2	14	2	2	19	19	2	1	1	4
182	Rajeswari	30	1	3	1	3	3	20000	1	1	6666	3	1	2	1	3	2	2	1	1	2	1	2	2	13	2	2	27	28	3	1	1	3
183	Selvi	22	1	5	1	5	4	20000	1	1	10000	3	2	2	1	3	2	3	2	1	2	1	1	2	14	2	2	21	21	0	1	1	6
184	Jeyanthi	23	1	4	1	6	3	20000	1	1	10000	2	1	2	2	2	2	2	2	1	2	1	2	1	14	2	2	22	22	0	1	1	3
185	Amala	23	1	6	1	6	3	12000	1	1	6000	3	1	3	3	3	2	2	2	1	2	1	2	2	13	2	2	22	22	0	3	2	5
186	Suganthi	34	1	4	1	4	5	15000	1	1	5000	3	1	2	3	2	3	2	2	1	2	1	1	2	15	2	2	29	30	4	1	2	5
187	Vijaya	26	1	5	1	5	4	12000	1	1	6000	3	1	1	2	2	2	2	2	1	2	1	1	2	14	2	2	23	25	0	1	1	4
188	Kavitha	35	1	4	2	4	2	15000	1	1	5000	2	2	2	3	1	1	2	2	1	2	1	2	2	14	2	2	21	25	4	3	1	4
189	Rukmani	36	1	4	2	5	4	20000	1	1	6666	3	2	2	2	3	2	2	2	1	2	1	1	2	15	2	2	20	21	3	1	1	4
190	Sumithra	28	1	4	1	4	5	12000	1	1	4000	3	1	2	2	2	2	2	1	2	2	1	1	2	14	2	2	19	20	1	1	2	5
191	Chithra	28	1	1	1	3	6	12000	1	1	3000	3	1	1	2	2	2	2	1	1	2	1	1	2	13	2	2	20	21	1	3	2	5
192	Kamali	28	1	4	1	3	6	12000	1	1	3000	3	1	2	3	3	2	2	2	1	2	1	1	2	13	2	2	20	21	1	1	2	5
193	Jeyasree	29	1	6	1	5	5	10000	1	1	3333	3	1	2	2	2	2	2	2	1	2	1	1	2	14	2	2	23	24	1	1	1	6
194	Devika	21	1	6	1	5	4	12000	1	2	4000	3	1	1	2	1	2	2	2	1	2	1	2	2	13	2	2	20	21	1	1	1	2
195	Saritha	25	1	3	1	3	6	9000	1	1	3000	4	1	1	1	1	1	2	1	1	2	1	2	2	14	2	2	20	21	1	3	2	5
196	Selvakumari	32	1	6	1	7	5	12000	1	2	6000	3	1	1	1	1	2	2	2	1	2	1	2	2	14	3	2	29	30	1	1	1	4
197	Sujatha	27	1	5	1	5	5	12000	1	2	3000	3	2	1	3	3	2	2	2	1	2	1	1	2	13	2	2	22	23	3	3	1	4
198	Sasidevi	24	1	5	1	5	6	12000	1	2	3000	3	1	2	3	3	2	2	2	1	2	1	1	2	13	2	2	18	24	3	1	1	2
199	Violet	32	1	4	1	4	6	10000	1	1	3333	4	2	2	3	3	2	2	2	1	2	1	2	2	13	2	2	22	23	3	1	1	2
200	Hemalatha	21	1	4	1	3	6	15000	1	2	3000	4	3	3	2	3	1	2	1	1	2	1	2	2	14	2	2	17	18	2	3	2	5
201	Saida	24	1	5	1	3	6	12000	1	2	3000	4	1	1	3	3	2	2	1	1	2	1	2	2	13	2	2	18	19	3	3	2	5
202	Rebecka	24	1	5	1	5	6	12000	1	1	3000	3	1	1	2	2	2	2	2	1	2	1	2	2	14	2	2	20	21	2	1	1	3
203	Mageswari	34	1	6	1	5	2	40000	1	2	10000	2	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	30	31	1	1	1	3
204	Thilagavathi	21	1	5	1	3	6	15000	1	2	3000	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	3
205	Geetha	28	1	7	2	6	2	55000	1	1	18333	1	1	1	2	1	2	2	2	1	2	1	2	2	13	2	2	24	25	2	1	1	6
206	Ranjitha	30	1	3	2	5	4	10000	1	1	5000	3	1	2	3	2	2	2	2	2	2	1	2	2	14	3	2	21	28	0	1	1	4
207	Sangeeda	25	1	4	1	6	1	20000	1	1	6666	2	1	1	1	1	2	2	2	1	2	1	1	2	15	2	2	21	22	3	3	1	4
208	Jaya	25	1	6	1	6	4	12000	1	1	4000	3	2	3	1	3	3	2	2	2	2	1	2	2	13	1	2	19	20	3	1	1	4
209	Saranya	26	1	6	1	5	4	25000	1	1	#####	2	2	2	3	2	2	2	1	2	1	2	2	14	1	2	25	25	0	1	1	6
210	Vasuki	26	1	3	1	4	6	10000	1	2	3333	4	2	1	2	2	3	3	2	1	2	1	2	2	14	1	2	25	26	0	1	1	4
211	Manimegalai	25	1	5	1	4	5	10000	1	2	2500	3	1	2	3	2	2	2	2	1	2	1	2	2	15	2	2	22	22	3	3	1	4

212	Astalakshmi	30	1	4	1	6	4	10000	1	1	3333	3	1	3	2	2	2	3	2	1	2	1	2	2	14	2	2	24	24	0	3	2	5
213	Lalitha	20	1	4	1	4	4	12000	1	2	3333	3	2	2	3	3	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	2
214	Dhana	23	1	3	1	4	4	12000	1	2	3000	3	2	2	3	3	2	2	2	1	2	1	2	2	13	3	2	20	21	1	1	1	2
215	Uzma	20	1	4	2	4	4	10000	1	2	3333	3	2	2	3	3	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	2
216	Janaki	28	1	3	1	3	6	10000	1	1	3333	4	2	3	3	2	2	2	2	1	2	1	2	2	14	3	2	24	25	2	3	2	5
217	Jeenath	27	1	6	1	4	6	12000	1	1	3000	4	1	1	2	2	2	2	2	1	2	1	2	2	13	2	2	22	24	2	1	1	3
218	Ammu	28	1	6	1	5	3	25000	1	1	5000	2	1	2	2	2	3	3	2	1	2	1	2	2	13	2	2	23	24	1	1	1	3
219	Leela	20	1	5	1	3	4	24000	1	2	4000	2	1	1	1	3	3	3	2	1	2	1	2	2	14	3	3	19	20	1	1	1	2
220	Vijila	22	1	4	1	4	3	12000	1	1	6000	2	1	3	3	2	2	2	2	1	2	1	2	2	14	1	2	21	22	0	1	1	2
221	Sulochana	20	1	5	1	3	6	36000	1	2	6000	2	1	1	1	2	2	2	2	1	2	1	3	2	13	2	2	19	20	0	1	1	2
222	Ashvini	20	1	5	1	5	4	12000	1	2	4000	3	1	3	3	2	2	2	2	1	2	1	2	2	13	2	2	19	20	0	1	1	2
223	Banupriya	24	1	5	1	3	4	12000	1	1	3000	3	2	2	2	2	2	2	2	1	2	1	3	2	14	2	2	19	20	0	1	1	2
224	Sathya	22	1	5	1	4	6	12000	1	2	3000	4	1	1	2	2	2	2	2	1	2	1	3	2	14	2	2	20	21	0	1	1	2
225	Rahini	21	1	4	1	4	3	16000	1	2	4000	2	1	1	3	3	3	3	2	1	2	1	2	2	13	2	2	19	20	0	1	1	2
226	Sandya	23	1	3	1	3	6	10000	1	1	3333	4	1	3	3	2	2	2	2	1	2	1	2	2	14	2	2	19	20	1	1	1	2
227	Kaveeya	24	1	4	1	4	3	20000	1	2	4000	2	2	1	1	1	2	2	2	1	2	1	3	2	14	2	2	21	23	0	1	1	2
228	Anandi	20	1	5	1	3	6	10000	1	1	5000	4	2	1	2	3	2	2	2	1	2	1	1	2	13	2	2	18	19	0	3	2	5
229	Jasmine vinu	27	1	4	1	5	5	15000	1	1	5000	4	1	1	3	3	3	2	2	1	2	1	3	2	14	2	2	21	22	1	1	1	2
230	Rathika	26	1	6	2	6	4	15000	1	1	5000	3	1	3	2	3	3	3	2	1	2	1	2	2	13	2	2	23	24	1	1	1	4
231	Jancy	26	1	4	1	4	4	15000	1	1	5000	3	1	2	3	3	3	2	2	2	2	1	2	2	14	2	2	19	20	3	3	2	5
232	Shanthi	25	1	5	1	4	4	12000	1	2	3000	3	1	2	3	3	2	2	2	1	2	1	2	2	15	2	2	19	19	3	3	2	5
233	Kalaivani	25	1	5	2	4	4	15000	1	2	3000	3	1	3	3	3	2	2	2	1	2	1	2	2	14	2	2	21	22	3	3	2	5
234	Vimala	30	1	5	1	6	4	12000	1	2	3000	3	1	2	3	2	2	3	2	2	2	1	2	2	14	1	2	23	30	0	3	1	2
235	Anu	25	1	7	1	6	4	15000	1	2	5000	3	1	2	3	3	3	2	2	1	2	1	2	2	13	2	2	24	24	0	3	1	4
236	Femina	20	1	5	1	4	4	15000	1	2	3000	3	1	2	3	2	2	2	2	2	2	1	1	2	13	2	2	19	19	0	3	2	5
237	Gayathri	31	1	3	1	5	3	25000	1	2	5000	2	1	2	3	3	2	2	2	1	2	1	1	2	15	1	2	21	22	3	3	2	5
238	Nirmala	30	1	3	1	5	4	15000	1	1	5000	3	1	2	3	3	2	2	2	1	2	1	1	2	14	1	2	22	24	2	3	2	5
239	Vidya	28	1	6	2	6	3	20000	1	2	5000	2	2	2	1	1	3	2	2	1	2	1	2	1	14	2	2	25	27	0	3	2	5
240	Santha	28	1	2	1	4	4	15000	1	1	5000	3	2	3	3	3	2	2	1	2	2	1	2	2	16	1	2	25	28	3	3	2	5
241	Pooja	21	1	4	1	3	4	15000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	12	3	2	20	20	0	3	2	5
242	Muthulakshmi	34	1	5	2	4	4	15000	1	1	5000	3	2	2	3	3	3	3	2	1	2	1	2	2	16	2	2	27	31	2	3	2	5
243	Savitha	26	1	5	1	3	4	15000	1	1	5000	3	1	2	3	3	2	2	2	1	2	1	2	2	13	1	2	21	22	3	1	1	2
244	Durgadevi	22	1	4	1	1	4	12000	1	1	6000	4	2	2	3	2	2	2	2	2	2	1	1	2	12	2	2	19	22	0	3	2	5
245	Mahalakshmi	26	1	4	1	4	5	12000	1	1	4000	3	1	2	3	3	2	3	2	1	2	1	1	2	13	2	2	21	22	2	3	2	5
246	Thenmozhi	25	1	4	1	4	4	12000	1	1	4000	3	1	3	3	2	2	2	2	1	2	1	2	2	13	3	2	22	23	2	3	2	5
247	Kalpana devi	27	1	5	1	5	4	15000	1	1	7500	3	1	2	2	3	2	2	2	2	1	1	2	2	2	14	1	2	26	26	0	3	2	5
248	Suseela	25	1	5	1	6	4	12000	1	1	4000	3	1	2	3	3	2	2	2	2	1	2	1	2	2	13	3	2	19	19	3	1	1	2
249	Kumari	21	1	3	1	4	5	9000	1	2	3000	4	1	2	3	3	2	2	2	1	2	1	2	2	14	2	3	18	21	0	3	1	2
250	Nalini	32	1	3	1	4	5	12000	1	1	4000	3	1	3	3	3	3	2	2	1	2	1	2	2	17	2	2	23	24	3	3	1	2
251	Meenatchi	27	1	3	1	3	3	18000	1	1	6000	3	2	2	3	2	2	3	2	1	2	1	1	2	17	2	2	23	24	3	3	1	2
252	Renuka	20	1	5	1	4	3	20000	1	2	5000	2	1	2	3	2	2	2	2	1	2	1	1	1	15	3	2	19	19	1	1	1	3
253	Sureka	27	1	4	1	4	4	12000	1	1	4000	3	1	2	3	3	3	2	2	1	2	1	2	2	15	2	2	23	24	0	3	1	2
254	Seethadevi	23	1	5	1	5	4	12000	1	2	3000	3	2	2	3	3	2	2	2	2	2	1	2	1	14	2	2	21	21	2	3	1	4
255	Sreedevi	26	1	7	1	4	6	12000	1	1	4000	4	1	2	3	2	2	2	2	1	2	1	1	2	15	2	2	21	21	3	1	1	4
256	Rani	24	1	6	1	5	3	15000	1	2	3000	3	2	2	3	3	3	2	2	1	2	1	2	2	10	1	2	23	23	0	1	1	4
257	Murugeswari	25	1	6	1	5	5	10000	1	2	3333	3	2	1	3	3	2	2	2	2	2	1	2	2	14	2	2	24	24	0	1	1	4
258	Archana	22	1	4	1	5	6	10000	1	1	5000	3	2	3	2	2	2	2	1	1	2	1	2	2	13	2	2	21	21	0	3	2	5
259	Saraswathi	23	1	5	1	4	4	12000	1	2	3000	3	2	1	3	2	2	2	2	1	2	1	2	2	15	1	2	18	19	1	1	2	5
260	Shyamala	31	1	6	1	3	4	15000	1	1	5000	3	1	1	3	3	2	2	2	1	2	1	2	2	17	2	2	27	27	3	1	2	5
261	Kanjana	20	1	6	1	7	2	25000	1	2	5000	1	1	1	3	3	2	2	2	1	2	1	1	2	15	1	2	18	19	0	1	1	2
262	Sinduja	33	1	4	1	3	6	10000	1	2	3333	4	2	1	3	3	2	2	2	2	2	1	2	1	14	1	2	18	19	3	3	2	5
263	Tamilselvi	26	1	4	1	3	4	15000	1	1	5000	4	1	1	3	2	2	2	1	2	1	1	2	16	2	2	19	20	2	3	2	5
264	Kalaiarasi	23	1	4	1	4	5	12000	1	2	3000	3	3	3	3	3	2	2	1	1	2	1	1	2	14	2	1	18	19	3	2	2	5
265	Suganya	22	1	5	1	5	2	18000	1	2	4500	2	1	1	3	3	2	2	2	1	2	1	2	2	14	1	2	21	22	0	1	1	4

266	Priyanka	27	1	4	1	4	3	16000	1	1	8000	2	2	1	3	1	2	2	2	1	2	1	2	1	13	3	2	26	26	0	3	1	2
267	Sasikala	24	1	4	1	4	5	12000	1	2	3000	3	2	1	3	3	2	2	2	1	2	1	1	2	14	2	2	23	23	0	1	1	2
268	Magadevi	25	1	7	1	7	3	15000	1	1	7500	2	1	2	2	2	2	2	2	1	2	1	3	2	15	2	2	25	25	0	1	1	2
269	Kanimozhi	29	1	3	1	4	4	12000	1	2	3000	3	1	1	2	3	2	2	2	1	2	1	2	2	12	2	1	24	25	2	1	1	3
270	Veeralakshmi	31	1	6	1	4	5	12000	1	1	12000	3	1	1	3	3	3	2	2	1	2	1	1	2	17	2	2	23	24	3	3	1	2
271	Yasmine	27	1	3	1	4	5	12000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	25	26	2	1	1	3
272	Mathimala	24	1	5	1	5	4	12000	1	1	4000	3	1	1	3	2	2	2	2	1	2	1	1	1	14	2	2	20	21	1	1	1	2
273	Krishnakumari	28	1	5	1	5	3	18000	1	1	6000	2	1	1	2	2	2	2	2	1	2	1	1	1	13	2	2	24	24	3	1	1	2
274	Shami	26	1	7	1	4	4	15000	1	2	5000	3	1	1	1	2	2	3	2	1	2	1	2	2	17	2	2	25	25	0	1	1	4
275	Pitchammal	27	1	3	1	4	5	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	2	2	16	2	2	19	21	2	3	1	2
276	Jenath fathima	20	1	5	1	6	1	24000	1	2	6000	1	1	1	1	1	2	2	2	1	2	1	2	2	13	2	2	19	20	0	3	1	4
277	Yamini	31	1	2	1	4	4	15000	1	1	5000	3	1	1	3	2	2	2	2	1	2	1	1	2	14	1	2	25	26	0	3	1	2
278	Kokila	21	1	1	1	1	6	12000	1	1	6000	4	2	1	3	3	3	2	2	2	2	1	2	2	15	2	2	17	18	3	3	2	5
279	Subha	22	1	4	1	4	4	12000	1	1	6000	3	1	1	2	3	2	2	2	1	2	1	2	2	14	2	2	21	21	0	1	1	4
280	Anitha	23	1	5	1	3	4	21000	1	2	5250	2	1	1	3	3	3	2	2	1	2	1	2	2	13	2	2	20	21	1	3	1	3
281	Shanoz	22	1	6	1	5	3	20000	1	1	10000	2	2	2	1	1	3	3	2	2	1	2	1	2	14	2	2	19	21	0	1	1	2
282	Indumathi	25	1	6	1	5	4	18000	1	1	9000	3	2	3	3	3	3	2	2	1	2	1	2	2	14	2	2	23	24	0	3	2	5
283	Revathi	23	1	5	1	6	3	15000	1	1	7500	2	1	1	2	2	3	2	2	1	2	1	2	2	13	2	2	22	22	0	1	1	2
284	Kalavathi	26	1	5	1	3	3	12000	1	1	4000	3	1	1	1	1	2	2	2	1	2	1	1	2	14	2	2	20	21	3	1	1	4
285	Abirami	22	1	5	1	4	4	15000	1	1	5000	3	1	1	2	3	2	2	2	1	2	1	2	2	11	2	2	19	19	2	1	1	4
286	Banumathy	27	1	4	1	3	4	15000	1	1	5000	3	1	2	3	2	2	2	1	2	1	2	2	2	12	2	2	21	22	3	1	1	2
287	Davamani	29	1	5	1	5	2	18000	1	1	6000	2	1	1	3	3	2	2	2	1	2	1	2	2	15	2	2	25	26	3	1	1	4
288	Ezhilarasi	31	1	7	1	6	2	24000	1	1	8000	1	1	1	1	1	2	2	2	1	2	1	2	2	13	2	2	25	26	3	1	1	4
289	Kalyani	25	1	6	1	5	3	12000	1	1	6000	3	1	1	3	1	2	2	2	1	2	1	2	2	16	3	2	24	27	0	1	1	3
290	Suba	22	1	2	1	2	6	12000	1	1	6000	4	1	1	2	2	3	3	2	1	2	1	2	2	14	2	2	21	21	0	3	2	5
291	Nandinidevi	24	1	5	1	6	4	16000	1	1	8000	2	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	22	23	0	1	1	4
292	Santhakumari	24	1	5	1	6	4	16000	1	2	4000	2	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	22	23	0	1	1	4
293	Helan	23	1	4	1	4	4	12000	1	1	6000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	22	23	0	1	1	2
294	Abitha	23	1	5	1	3	4	15000	1	2	5000	3	1	1	2	2	2	2	2	1	2	1	2	2	12	2	2	21	22	0	1	2	5
295	Sundari	23	1	3	1	4	4	12000	1	1	4000	3	1	1	3	3	2	2	2	2	2	1	2	2	14	2	2	20	21	2	1	1	2
296	Valliammal	27	1	3	1	6	4	15000	1	1	5000	3	1	1	3	3	2	2	2	1	2	1	1	2	14	1	2	25	26	1	1	1	4
297	Harini	27	1	6	1	5	2	18000	1	1	6000	2	1	1	3	2	2	2	2	1	2	1	2	2	13	2	2	21	21	3	1	1	4
298	Fathima	22	1	5	1	4	4	18000	1	2	4500	3	1	1	2	2	3	2	2	1	2	1	2	2	15	2	2	19	19	3	1	1	2
299	Manimozhi	25	1	6	1	5	4	12000	1	1	4000	3	1	1	2	2	2	2	2	1	2	1	2	2	13	2	2	22	23	3	1	1	4
300	Jeyalakshmi	30	1	3	1	3	4	12000	1	1	4000	3	1	1	3	3	3	3	2	1	2	1	2	2	14	2	2	25	26	3	3	1	2
301	Shanthi	28	1	5	1	6	3	24000	1	2	6000	2	2	2	3	3	2	2	2	1	2	1	2	2	13	3	2	28	28	0	3	2	5
302	Amalrani	26	1	5	1	4	4	16000	1	1	8000	3	1	1	2	2	2	2	2	1	2	1	2	2	14	2	2	25	25	0	1	1	3
303	Elizabeth	21	1	4	1	6	4	12000	1	1	6000	3	1	1	3	3	2	2	1	1	2	1	3	2	13	2	2	20	21	1	1	1	2
304	Bacyalakshmi	23	1	5	1	4	6	12000	1	2	4000	4	2	1	3	3	3	3	1	1	2	1	3	2	14	2	2	20	21	1	1	1	2
305	Aswitha	26	1	4	1	3	4	10000	1	2	3333	4	1	1	3	3	2	2	1	1	2	1	2	2	13	2	2	24	25	1	3	1	2
306	Monika	21	1	4	1	3	6	10000	1	2	3333	4	2	3	3	3	2	2	1	1	2	1	4	2	14	2	2	21	22	1	3	2	5
307	Sremathy	22	1	5	1	5	5	10000	1	1	3333	3	1	1	3	3	2	2	1	1	2	1	3	2	14	2	2	18	19	1	1	1	2
308	Leelavathy	36	1	3	1	4	5	12000	1	1	3333	3	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	25	26	3	1	1	2
309	Thendral	19	1	6	1	5	5	14000	1	2	4000	3	3	3	3	3	2	2	1	1	2	1	2	2	13	2	2	18	19	0	3	2	5
310	Jasmiine mary	25	1	4	1	4	6	12000	1	1	4000	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	20	21	3	3	2	5
311	Uma	25	1	4	1	4	6	10000	1	1	3333	4	1	1	3	3	2	2	2	1	2	1	2	2	14	2	2	20	21	3	3	2	5
312	Indradevi	23	1	3	1	3	6	10000	1	1	5000	4	2	3	3	3	2	2	1	2	2	1	2	2	15	2	2	21	22	2	3	2	5
313	Pavithra	32	1	5	1	6	4	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	3	2	15	2	2	26	27	3	1	1	2
314	Gunavathi	24	1	6	1	4	4	18000	1	1	6000	3	1	3	3	3	2	2	2	1	2	1	3	2	12	2	2	21	23	0	1	1	3
315	Chandra	20	1	6	1	4	6	20000	1	2	5000	4	1	1	3	3	2	2	2	1	2	1	3	2	13	2	2	19	20	1	1	1	3
316	Sreelatha	26	1	4	1	3	6	10000	1	1	3333	4	2	3	3	3	2	2	1	1	2	1	3	2	12	2	2	23	24	2	3	2	5
317	Reka	21	1	5	1	6	3	24000	1	2	6000	2	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	20	21	0	1	1	3
318	Zubeda	21	1	5	1	6	3	18000	1	2	6000	2	2	1	3	3	2	2	2	1	2	1	3	2	13	2	2	20	21	0	1	1	3
319	Kamatchi	29	1	4	1	5	4	20000	1	2	5000	3	1	1	3	3	3	2	2	1	2	1	2	2	14	2	2	23	24	3	1	1	3

320	Mayil	30	1	4	1	5	4	18000	1	2	4500	3	2	3	3	3	3	2	1	1	2	1	2	2	13	2	2	24	24	3	3	2	5
321	Chandrika	23	1	5	1	5	3	24000	1	2	4000	2	1	1	3	3	2	2	2	1	2	1	3	2	15	2	2	19	20	1	1	1	4
322	Julika begum	29	1	3	1	1	6	10000	1	2	2500	4	1	1	3	3	2	2	1	1	2	1	3	2	14	2	2	28	29	0	1	1	3
323	Umadevi	20	1	4	1	4	4	16000	1	2	4000	3	1	1	3	3	2	2	1	1	2	1	3	2	12	2	2	18	19	0	1	1	2
324	Gondimathy	24	1	6	1	4	4	20000	1	2	4000	3	1	1	3	3	2	2	2	2	2	1	2	2	13	2	2	23	23	0	1	1	1
325	Karpagum	31	1	6	1	3	4	12000	1	1	3000	3	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	21	22	3	3	2	5
326	Easwari	25	1	1	1	1	6	10000	1	2	8000	4	1	2	3	3	2	2	2	1	2	1	2	2	13	2	2	21	22	3	3	2	5
327	Benita	29	1	4	1	4	5	10000	1	1	3333	3	1	1	3	3	2	2	1	1	2	1	3	1	13	2	2	24	24	2	3	1	2
328	Seetha	24	1	5	1	4	5	12000	1	2	3000	3	2	1	3	3	2	2	2	2	2	1	2	1	13	2	2	22	23	0	3	2	5
329	Punitha	31	1	4	1	4	4	15000	1	2	5000	3	1	1	3	3	2	2	2	2	2	1	2	2	13	2	2	19	19	0	3	1	2
330	Vani	22	1	4	1	4	4	12000	1	1	6000	3	2	1	3	3	2	2	2	2	2	1	2	1	14	2	2	21	22	0	3	2	5
331	Johnsirani	22	1	6	1	5	3	15000	1	2	3000	3	1	2	2	3	3	2	2	1	2	1	2	2	15	2	2	19	21	0	1	1	2
332	Anbukarasi	21	1	2	1	3	6	10000	1	2	3333	4	1	1	2	3	3	2	2	1	2	1	2	2	14	2	2	21	21	0	3	2	5
333	Gomathy	30	1	4	1	5	2	20000	1	2	5000	2	1	1	3	3	2	2	2	1	2	1	2	2	13	2	2	25	30	0	1	1	3
334	Kasthuri	18	1	2	1	1	6	10000	1	1	3333	4	1	1	3	3	3	2	1	1	2	1	2	1	13	2	2	16	17	0	3	2	5
335	Devi	21	1	5	1	5	3	18000	1	1	6000	3	1	1	3	3	3	2	1	1	2	1	2	1	13	2	2	18	20	0	3	2	5
336	Senbagum	19	1	4	1	6	3	24000	1	2	6000	2	1	1	3	3	3	2	2	1	2	1	2	1	13	2	2	15	19	0	3	1	4
337	Megala	26	1	6	1	6	1	24000	1	1	8000	1	1	1	3	3	2	2	2	1	2	1	1	2	14	2	2	23	23	3	1	1	4
338	Sumathi	19	1	5	1	7	2	30000	1	1	15000	1	1	2	3	3	2	2	2	1	2	1	2	1	13	2	2	18	19	0	3	2	5
339	Lakshmi	22	1	4	1	4	4	15000	1	1	7500	3	2	3	3	3	2	2	1	1	2	1	2	1	14	2	2	21	22	0	3	2	5
340	Suryakala	20	1	4	1	4	5	15000	1	1	7500	3	1	1	2	2	2	2	2	1	2	1	3	2	8	2	2	19	20	0	3	2	5
341	Kavitha	22	1	6	1	5	3	30000	1	1	7500	2	1	1	1	1	2	3	2	1	2	1	2	1	13	2	2	21	22	0	3	2	5
342	Mallika	28	1	4	1	6	5	18000	1	1	6000	3	1	1	2	2	2	2	2	1	2	1	2	2	13	3	2	22	24	3	1	1	3
343	Subasree	27	1	5	1	6	2	24000	1	2	6000	3	2	2	1	3	2	2	2	1	2	1	2	2	13	2	2	26	26	0	3	1	2
344	Jayamani	28	1	3	1	4	4	12000	1	2	3000	3	1	1	1	3	2	2	2	1	2	1	2	2	13	3	2	26	27	2	1	1	2
345	Kala	24	1	5	1	5	4	15000	1	1	5000	3	1	3	3	3	3	2	2	1	2	1	1	2	12	1	2	19	20	2	3	2	5
346	Komala	20	1	4	1	3	4	15000	1	2	3000	3	1	1	3	3	2	2	2	1	2	1	1	2	15	2	2	18	19	0	3	2	5
347	Vanathy	24	1	4	1	3	4	15000	1	1	5000	3	2	1	3	3	2	2	2	1	2	1	1	2	11	2	2	19	19	0	3	1	2
348	Kavipriya	28	1	4	1	4	5	12000	1	2	4000	3	2	3	3	3	2	2	1	1	2	1	2	2	12	2	2	27	27	0	3	2	5
349	Anitha	30	1	7	1	6	3	30000	1	2	6000	2	1	1	3	3	2	2	2	1	2	1	1	2	14	2	2	26	26	3	1	1	4
350	Sundaravalli	22	1	5	1	5	4	15000	1	2	5000	3	1	1	3	3	2	3	2	1	2	1	2	2	14	3	2	21	22	0	1	1	4

Whether IFA TAKEN	No of Tab	ANY IRON SUCROSE infusion done	Any blood transfusion done during pregnancy	Gravida	Para	Live	Abortion	Obstetric score	Time of registration of presnt pregnancy	No. of AN visits of present delivery	De-worming done	Hb.1st	Hb.2nd	Hb.3rd	How many days since delivery now	Mode of delivery	Any excess bleeding delivery	Any blood transfusion after delivery	Have you received JSY/MRMBS	When breast feeding after delivery	Whether exclusive breastfeeding	Nature of vaginal dischare now	Whether aware about iron rich food tobe taken during postpartum period	Whether taking IFA tab. Now	Weight	Height	BMI	Pallor of conjunctiva	Pallor of palm/nail bed/tongue	Pedal oedeme	Dyspnoea	CVS FINDING	Abdomen	Hb. Estimation by Hemo Cue Hb 301
1	100	1	2	2	2	2	0	2	3	3	2	13	13	13	42	2	2	2	2	1	1	3	2	2	64	160	25	2	2	2	2	2	2	13
1	100	2	2	2	2	2	0	2	1	3	1	12	12	13	41	1	2	2	1	1	1	3	1	1	50	150	22	2	2	2	2	2	2	12.7
1	100	2	2	2	2	2	0	2	1	3	2	14	13	13	14	2	2	2	1	2	1	1	1	1	70	155	29	2	2	2	2	2	1	13.5
1	100	2	2	1	1	1	0	1	3	3	1	13	13	14	41	2	2	2	1	2	1	3	1	2	55	140	28	2	2	2	2	2	2	13.2
1	100	1	2	1	1	1	0	1	1	3	1	13	13	14	41	2	2	2	2	1	1	3	1	1	57	156	23	2	2	2	2	2	2	13.3
1	100	2	2	1	1	1	0	1	1	3	1	13	13	14	41	1	2	2	2	1	1	3	2	2	66	154	27	2	2	2	2	2	2	13.5
1	100	2	2	2	2	2	0	2	1	3	1	13	13	13	41	2	2	2	1	2	1	3	1	2	44	148	20	2	2	2	2	2	2	12.9
1	100	2	2	1	1	1	0	1	1	3	1	13	13	13	42	1	2	2	1	1	1	3	1	2	55	150	24	2	2	2	2	2	2	13.5
1	100	2	2	2	2	2	0	2	1	3	1	12	12	12	42	1	2	2	1	1	1	3	1	2	71	159	28	2	2	2	2	2	2	11.2
1	100	1	2	3	2	2	1	2	1	3	2	14	13	14	41	3	2	2	1	3	1	3	1	2	53	148	24	2	2	2	2	2	2	14.8
1	100	1	2	3	2	2	1	2	2	3	1	9.6	11	13	20	1	2	2	1	1	1	1	1	2	60	157	24	2	2	2	2	2	1	10.8
1	100	2	2	3	2	2	1	2	2	3	2	9.8	10	11	10	1	2	2	1	1	1	1	1	2	56	142	28	2	2	2	2	2	1	11
1	100	2	2	3	3	3	0	3	2	3	1	12	12	13	30	1	2	2	1	1	1	1	1	1	51	157	20	2	2	2	2	2	1	12
1	100	2	2	2	2	2	0	2	1	3	1	13	13	13	32	1	2	2	1	1	1	2	1	2	50	156	20	2	2	2	2	2	1	12.5
1	100	2	2	1	1	1	0	1	1	3	1	11	10	12	3	1	2	2	1	1	1	1	1	2	45	153	19	2	2	2	2	2	1	12.4
1	30	1	2	2	2	2	0	2	1	3	1	8	8	9.6	3	1	2	2	1	1	1	1	1	2	50	147	23	1	1	2	2	2	1	9.4
1	100	1	2	1	1	1	0	1	1	3	1	10	9	9	5	1	2	2	1	1	1	1	1	2	65	150	28	2	2	2	2	2	1	10.6
1	100	1	2	2	2	2	0	2	1	3	2	9.8	10	11	7	1	2	2	1	1	1	1	1	2	67	161	25	2	2	2	2	2	1	10.6
1	100	2	2	3	2	2	1	2	2	3	1	12	10	9.7	2	1	2	2	1	1	1	1	1	2	60	160	23	2	2	2	2	2	1	10.8
1	100	2	2	2	2	2	0	2	2	3	1	10	9.8	10	7	1	2	2	1	1	1	1	1	2	56	153	24	2	2	2	2	2	1	10
1	30	2	2	2	2	2	0	2	3	3	2	8.9	9.2	9.5	15	1	2	2	1	1	1	1	1	2	63	150	28	1	1	2	2	2	1	9.6
1	200	2	2	2	2	2	0	2	1	3	1	12	10	11	3	1	2	2	1	1	1	1	1	2	58	153	25	2	2	2	2	2	1	10
1	200	1	2	2	2	2	0	2	1	3	1	9.4	9	11	42	1	2	2	1	1	1	2	1	2	45	153	19	2	2	2	2	2	2	10
1	100	2	2	1	1	1	0	1	1	3	1	11	12	12	14	2	2	2	1	1	1	1	1	2	55	146	26	2	2	2	2	2	1	11.8
1	100	1	2	2	2	2	0	2	1	3	1	9.4	9.6	9.8	25	2	2	2	1	1	1	2	1	2	77	154	32	1	1	2	2	2	1	9.6
1	100	2	2	2	2	2	0	2	1	3	1	14	13	14	41	2	2	2	2	1	1	3	1	1	67	153	29	2	2	2	2	2	2	14
1	30	2	2	1	1	1	0	1	1	3	1	14	13	14	41	2	2	2	1	1	1	3	2	2	60	153	25	2	2	2	2	2	2	12
1	100	2	2	2	2	2	0	2	3	3	1	9.2	8.8	8.2	42	1	2	2	1	1	1	3	2	2	42	142	21	2	2	2	2	2	2	9.8
1	100	2	2	2	2	2	0	2	1	3	2	12	12	12	42	2	2	2	1	2	1	3	2	2	82	165	30	2	2	2	2	2	2	9.6
1	100	2	2	1	1	1	0	1	1	3	2	14	14	14	42	1	2	2	2	1	1	3	2	2	65	154	27	2	2	2	2	2	2	12.4
1	100	2	2	1	1	1	0	1	1	3	1	12	11	13	30	1	2	2	2	2	1	3	2	2	60	160	23	2	2	2	2	2	1	11
1	100	2	2	2	2	2	0	2	2	3	1	13	13	13	42	1	2	2	1	1	1	3	2	2	55	151	24	2	2	2	2	2	2	11.5
1	60	2	2	2	2	2	0	2	1	3	2	10	9.2	9.8	32	2	2	2	1	2	1	2	2	2	53	150	24	1	1	2	2	2	1	9
1	30	1	2	1	1	1	0	1	1	3	2	9.6	9.2	9.4	14	2	2	2	1	2	1	2	1	2	55	151	24	1	1	2	2	2	1	8.8
1	100	1	2	1	1	1	0	1	1	3	1	10	8.7	9.3	22	2	2	2	1	2	1	2	1	2	49	153	20	1	1	2	2	2	1	9.2
1	100	1	2	1	1	1	0	1	1	3	1	9.8	9	9.6	12	2	2	2	1	2	1	2	1	2	58	152	25	1	1	2	2	2	1	9
1	100	2	2	2	2	2	0	2	2	3	1	11	11	11	30	1	2	2	1	1	1	2	2	2	75	158	30	2	2	2	2	2	1	10
1	100	2	2	3	2	1	1	2	1	3	2	9	9.2	9.8	14	2	2	2	2	1	1	1	1	2	46	142	23	2	2	2	2	2	1	9
1	100	2	2	2	2	2	0	2	1	3	2	13	12	12	41	2	2	2	1	1	1	3	2	2	63	157	26	2	2	2	2	2	2	12
1	100	2	2	1	1	1	0	1	1	3	1	10	9.8	9.2	14	1	2	2	1	1	1	1	1	2	67	163	25	1	1	2	2	2	1	9
1	100	2	2	1	1	1	0	1	1	3	2	12	11	13	3	1	2	2	1	1	1	1	1	2	56	153	24	1	1	2	2	2	1	9.2
1	100	2	2	1	1	1	0	1	1	3	1	12	11	11	7	1	2	2	1	1	1	1	2	2	60	158	24	2	2	2	2	2	1	10
1	100	2	2	1	1	1	0	1	1	3	1	11	11	11	3	1	2	2	1	1	1	1	1	2	56	156	23	2	2	2	2	2	1	10.2
1	200	1	2	3	3	3	0	3	1	3	1	9.5	9	11	7	1	2	2	1	1	1	1	1	2	66	160	25	2	2	2	2	2	1	10
1	30	1	2	2	2	2	0	2	1	3	1	8.9	9	9.6	41	1	1	2	2	2	1	3	2	2	50	155	21	1	1	2	2	2	2	9.4
1	100	2	2	2	2	2	0	2	1	3	1	12	12	12	10	1	2	2	1	1	1	1	1	2	67	153	27	2	2	2	2	1	1	11
1	100	2	2	2	2	2	0	2	1	3	2	11	9.7	11	3	1	2	2	1	1	1	1	2	2	54	157	22	2	2	2	2	2	1	10.6
1	100	2	2	2	2	2	0	2	1	3	1	10	9.4	9.6	3	1	2	2	2	1	1	1	2	2	55	160	21	1	1	2	2	2	1	9
1	100	1	2	1	1	1	0	1	3	3	2	11	10	12	40	1	2	2	1	1	1	3	2	2	50	156	21	1	1	2	2	2	2	11

1	100	1	2	2	2	2	0	2	1	3	1	11	11	12	3	1	2	2	1	1	1	1	2	2	62	160	24	2	2	2	2	2	1	10.8
1	100	2	2	2	2	2	0	2	1	3	1	11	10	11	40	2	2	2	2	3	2	3	1	2	67	160	26	2	2	2	2	2	2	12
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1	100	2	2	1	1	1	0	primi	1	3	1	10	10	10	7	1	2	2	1	1	1	1	2	2	49	152	21	1	1	2	2	2	1	9.8
1	200	2	2	1	1	1	0	primi	1	3	1	10	9	11	15	1	2	2	1	1	1	2	2	2	53	158	21	2	2	2	2	2	1	10.5
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1	100	2	2	2	2	2	0		1	3	1	13	13	13	32	1	2	2	1	1	1	2	1	2	50	156	21	2	2	2	2	2	1	12.5
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1	100	1	2	1	1	1	0		1	3	1	9.8	9	9.6	12	2	2	2	1	2	1	2	1	2	58	152	25	1	1	2	2	2	1	9
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1	200	1	2	2	2	2	0		1	3	1	12	9.6	9.8	30	1	2	2	1	1	1	2	2	2	74	155	30	1	2	2	2	2	1	9.6
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1	100	2	2	2	2	2	0		1	3	1	12	11	12	40	1	2	2	1	3	2	3	2	2	45	150	20	2	2	2	2	2	2	12
1	100	2	2	2	2	2	0		1	3	1	11	12	11	30	2	2	2	1	2	1	2	1	1	77	159	30	2	2	2	2	2	1	12.5
1	100	1	2	2	2	2	0		1	3	1	8.8	9.6	11	41	2	2	2	1	1	1	3	1	2	45	150	20	2	2	2	2	2	2	10.9
1	100	2	2	2	2	2	0		1	3	2	13	13	13	39	1	2	2	1	1	1	3	1	1	62	157	25	2	2	2	2	2	2	14
1	100	2	2	1	1	1	0	primi	1	3	1	13	12	12	42	1	2	2	2	1	1	3	1	1	62	150	28	2	2	2	2	2	2	10.2
1	100	2	2	2	2	2	0		1	3	1	11	11	12	41	1	2	2	1	1	1	3	2	2	60	160	23	2	2	2	2	2	2	11
1	200	1	2	1	1	1	0	primi	1	3	2	9.5	11	11	40	1	2	2	2	2	1	3	2	2	59	155	25	2	2	2	2	2	2	10.5
1	100	2	2	2	2	2	0		1	3	1	13	13	14	39	2	2	2	1	3	1	3	2	2	68	160	27	2	2	2	2	2	2	13
1	200	2	2	2	2	2	0		2	3	1	12	11	12	40	1	2	2	1	1	1	3	2	2	50	150	22	2	2	2	2	2	2	11
1	200	2	2	1	1	1	0	primi	1	3	1	9.8	8.6	9.8	40	1	2	2	1	3	2	3	2	2	63	160	25	2	2	2	2	2	2	10.4
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1	100	2	2	1	1	1	0	primi	1	3	2	12	10	12	40	2	2	2	2	2	1	3	2	2	45	150	20	2	2	2	2	2	2	11
1	45	2	2	1	1	1	0	primi	1	3	2	10	9.5	9.5	40	1	2	2	1	1	1	3	2	2	46	150	20	1	1	2	2	2	2	9.7
1	60	2	2	2	2	2	3	primi	1	3	1	11	10	10	41	1	2	2	1	1	1	3	2	2	50	148	23	1	1	2	2	2	2	9.6
1	100	2	2	2	2	2	0		1	3	1	12	12	11	41	1	2	2	1	1	1	3	2	2	50	145	24	2	2	2	2	2	2	10.5
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1	100	2	2	2	2	2	0		1	3	1	13	11	12	42	1	2	2	2	1	1	3	2	2	65	160	25	2	2	2	2	2	2	11
1	100	2	2	2	2	2	0		1	3	1	13	12	12	42	2	2	2	1	2	1	3	1	2	68	158	27	2	2	2	2	2	2	11
1	100	2	2	1	1	1	0	primi	1	3	1	12	12	12	42	1	2	2	2	1	1	3	1	2	58	155	24	2	2	2	2	2	2	10.8
1	100	2	2	1	1	1	0	primi	1	3	2	10	9.6	9.8	41	2	2	2	1	2	2	3	2	2	45	145	21	1	1	2	2	2	2	9.6
1	100	2	2	1	1	1	0	primi	1	3	2	11	11	11	42	2	2	2	1	2	1	3	2	2	44	147	20	2	2	2	2	2	2	10.2
1	100	2	2	1	1	1	0	primi	1	3	2	11	10	10	38	2	2	2	1	2	1	3	2	2	44	146	21	2	2	2	2	2	2	9.6
1	100	2	2	1	1	1	0	primi	1	3	1	10	9	9.5	40	2	2	2	1	2	1	3	2	2	45	150	20	2	2	2	2	2	2	10.2
1	100	1	1	1	1	1	0	primi	1	3	1	8	7	11	30	1	2	2	2	1	1	3	2	2	51	150	23	2	2	2	2	2	2	11
1	20	1	2	2	2	2	0		1	3	1	9	9.4	9.7	40	1	2	2	1	1	1	3	2	2	50	150	22	1	1	2	2	2	2	9.8
1	100	2	2	2	2	2	0		1	3	1	11	11	11	30	2	2	2	2	2	1	3	2	2	64	158	26	2	2	2	2	2	2	10.2
1	100	2	2	2	2	2	0		1	3	1	11	11	11	42	1	2	2	1	1	1	3	2	2	60	152	26	2	2	2	2	2	2	10.6
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1	200	2	2	1	1	1	0	primi	1	3	2	10	9	11	2	1	2	2	1	1	1	1	1	2	55	156	23	2	2	2	2	2	1	10.6
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1	100	2	2	3	1	1	2		1	3	1	10	11	11	3	1	2	2	1	1	1	1	2	2	54	154	23	2	2	2	2	2	1	10.8
1	30	1	1	1	1	1	0	primi	1	3	1	9.3	8	7	2	1	2	2	1	1	1	1	2	2	45	152	19	1	1	2	2	2	1	9.4
1	100	2	2	1	1	1	0	primi	1	3	1	11	9.5	11	2	1	2	2	1	1	1	1	2	2	61	158	24	1	1	2	2	2	1	9.6
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1	90	1	1	1	1	1	0	primi	1	3	1	11	9	9.2	40	1	2	2	1	1	1	3	2	2	49	150	21	1	1	2	2	2	2	8
1	30	2	2	2	2	2	0		1	3	2	9	9.2	9.8	42	1	2	2	1	1	1	3	2	2	53	148	24	1	1	2	2	2	2	9
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1	30	2	2	2	2	2	0		1	3	1	11	9.8	10	5	1	2	2	1	1	1	1	2	2	52	150	23	1	1	2	2	2	1	8.9
1	100	2	2	2	2	2	0		1	3	2	11	10	11	40	1	2	2	1	1	1	3	2	2	54	152	23	2	2	2	2	2	2	10.2
1	100	2	2	1	1	1	0	primi	1	3	2	11	10	11	3	1	2	2	1	1	1	1	2	2	63	152	27	2	2	2	2	2	1	10.8
1	200	2	2	1	1	1	0	primi	1	3	1	9.8	9	10	5	1	2	2	1	1	1	1	2	2	65	154	27	1	1	2	2	2	1	9.6
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1	100	1	2	1	1	1	0	primi	1	3	2	8.2	9	12	40	1	2	2	1	1	1	3	2	2	49	155	20	2	2	2	2	2	2	11.2
1	100	1	2	1	1	1	0	primi	1	3	2	8.6	9.5	11	39	1	2	2	1	1	1	3	2	2	48	156	20	2	2	2	2	2	2	11
1	100	2	2	2	2	2	0		1	3	1	11	10	11	36	2	2	2	2	1	1	2	2	2	62	157	25	1	1	2	2	2	1	9.8

1	60	2	2	2	2	2	0		1	3	1	11	10	11	33	2	2	2	2	1	1	2	2	2	73	160	28	1	1	2	2	2	1	9.6
1	100	2	2	1	1	1	0	primi	1	3	1	11	10	12	36	1	2	2	2	1	1	3	2	2	70	156	29	2	2	2	2	2	2	12
1	100	2	2	1	1	1	0	primi	1	3	2	11	10	11	5	1	2	2	2	1	1	1	2	2	54	152	23	1	1	2	2	2	1	9.8
1	100	2	2	2	1	1	1		1	3	2	11	10	11	12	2	2	2	2	1	1	1	2	2	62	152	27	1	1	2	2	2	1	9.6
2	0	1	2	1	1	1	0	primi	1	3	2	9.8	9.4	11	41	1	2	2	2	1	1	3	2	2	48	149	23	2	2	2	2	2	2	11
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1	200	2	2	1	1	1	0	primi	1	3	2	9.8	9.6	11	30	1	2	2	1	1	1	3	2	2	48	145	23	2	2	2	2	2	1	10.5
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1	100	1	2	1	1	1	0	primi	1	3	1	8.6	8	9	40	1	2	1	1	1	1	3	2	2	53	155	22	1	1	2	2	2	2	9
1	100	2	2	1	1	1	0	primi	2	3	1	9.5	10	10	42	2	2	2	1	1	1	3	2	2	58	154	24	1	1	2	2	2	2	9.5
1	200	2	2	1	1	1	0	primi	1	3	1	11	9.6	10	42	2	2	2	1	1	1	3	1	1	52	152	23	1	1	2	2	2	2	9.8
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1	100	2	2	1	1	1	0	primi	1	3	1	9.6	10	9	20	1	2	2	2	1	1	2	2	2	57	158	23	1	1	2	2	2	1	9.2
1	200	2	2	2	2	2	0		1	3	1	11	11	11	42	2	2	2	1	1	1	3	2	2	54	154	23	2	2	2	2	2	2	10.2
1	200	1	2	1	1	1	0	primi	1	3	2	12	11	12	10	1	2	2	1	1	1	2	2	2	61	156	25	2	2	2	2	2	1	11
1	90	1	2	1	1	1	0	primi	1	3	1	9	9.2	10	14	1	2	2	1	2	1	2	2	2	55	150	24	1	1	2	2	2	1	9.6
1	100	2	2	1	1	1	0	primi	1	3	1	10	10	10	7	1	2	2	1	1	1	1	2	2	53	152	23	1	1	2	2	2	1	9.8
1	200	2	2	1	1	1	0	primi	1	3	1	10	9	11	15	1	2	2	1	1	1	2	2	2	57	158	23	2	2	2	2	2	1	10.5
1	100	2	2	3	2	1	1		1	3	1	10	9	9.8	10	1	2	2	1	1	1	2	2	2	52	156	21	1	1	2	2	2	1	9.2
1	100	1	2	1	1	1	0	primi	1	3	2	9	8	10	37	1	2	2	2	3	1	3	2	2	42	145	20	2	2	2	2	2	2	11
1	100	2	2	2	2	2	0		2	3	1	12	11	11	40	1	2	2	1	1	1	3	2	2	48	150	21	2	2	2	2	2	2	11.2
1	100	2	2	2	2	2	0		1	3	1	10	9	9.5	38	1	2	2	1	1	1	3	2	2	60	160	23	1	1	2	2	2	2	9.5
1	200	2	2	1	1	1	0	primi	1	3	1	9	9	9.2	14	1	2	2	1	1	1	2	2	2	50	156	21	1	1	2	2	2	2	9.6
1	100	1	2	2	2	2	0		1	3	1	12	12	12	39	2	2	2	1	3	1	3	2	2	61	155	25	2	2	2	2	2	2	11
1	30	1	2	1	1	1	0	primi	1	3	2	9	8.2	10	14	2	2	2	1	3	1	1	2	2	42	138	22	1	1	2	2	2	1	9.5
1	100	2	1	2	2	1	0		1	3	2	9	9	12	30	2	2	2	1	1	1	3	1	1	58	155	24	2	2	2	2	2	1	12
1	100	2	2	1	1	1	0		1	3	1	12	10	12	30	2	2	2	1	1	1	3	1	1	65	160	25	2	2	2	2	2	1	11